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Education, Data and Futurity: a data-based school in the North East of England

Matt Finn

Abstract

An emerging and now highly significant way by which futures are being imagined and enacted in schools is through the increased production and use of data. This thesis explores the life of data and experiences of data-based living through a deeply-textured account from one school in North-East England. Based on a multi-method qualitative study it seeks, with pupils and teachers in the school, to understand how the proliferation of data is negotiated in detail, in place and in practice. From the school, and with its members, I consider what might constitute an ethic of care in the context of data.

The thesis offers a detailed exploration of the roles that data are playing in the process of education and the production of futures. I draw on and contribute to education studies, the sociology of education, data studies and the geographies of education, childhood, youth and young people, futurity and data. I argue that data work to bundle and bind. Data bundle together different spaces and times as ‘the school’, knowable in the present, comparable with recorded ‘pasts’ and enabling the imagining and realising of futures. This bundling of spaces, times and knowledges – both within and beyond the school – renders them amenable to judgment, decision and intervention. Data also act to bind people and their futures together where pupils and teachers become co-responsible for securing each other’s futures and so also the future of the school and the nation. The ‘pupil multiple’ is produced and pupils’ digital personae circulate with many sources of data assembled, sorted and sifted. However, the relationship between bodies and bytes, and different sources of data, shifts between coherence, divergence and blurring and becomes both a source of conflict and underpins an ‘atmosphere of progress’.

Education, Data and Futurity: a data-based school in the North East of England

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This thesis is submitted for the Degree of Doctor of Philosophy

2015

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Dedication

For Tabitha and Hope

Soli Deo Gloria

Chapter I | Introduction

“But without data, teachers and schools are blind. They cannot compare themselves with their neighbours or their own expectations; they cannot put any child's progress in context; they cannot use objective results to bury a poor reputation; they cannot, with conviction, explain to parents and governments where they are and how they and their students are doing. Without data, school and student improvement is virtually impossible.” (Kelly, 2013, “From the Editor - Your number's up if you don't embrace the data”, Times Educational Supplement Editorial)

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“Far too often levels are an easy way to make summative judgments of a process that is ongoing. Any formative impact they may have gets lost in a welter of jargon and cliché which, while it is present on most classroom walls, means little or nothing to students. The thought of using them to allocate performance-related pay fills me with more terror than I can say.

Surely we can do much better than this? Each and every student we have is an individual and will make progress in a different way and at varying pace. Surely the 'soft' data from a teacher and his/her knowledge of a student's talent will tell us more about their progress than 'hard' levels.

Let's free ourselves from this tyranny and trust our professionalism to tell us about progress, good teachers have always known this and more importantly they know how to communicate what needs to be done to their pupils” (‘Secret Teacher’, 2013, “Secret Teacher: our students deserve more than levels and data”, The Guardian, Teacher Network)

- 0 -

*“With regard to Gifted and Talented our aim is to get 40% of pupils to As and A*s so this year's going to be very data-centric, making sure that I'm checking up with departments at least three times a year, what their conversions are and how they're coming out. As a science teacher, I think everything you do is now focused on data, lessons are levelled, every assessment the pupil does is (.) comes out with a level that goes into a tracking spreadsheet. They sit tests and that goes in, and they, we get kids*

within science to traffic light, so at back of their books they traffic light it against what we expect them to get at the end of key stage 4, and if they're not then we need to work out why they're not. So yeah, I think everything we do is based on data." (Teacher at the school researched)

- 0 -

Over the last decade there has been a proliferation of data in schools. The production and use of data about pupils' learning, behaviour and attendance and parents' and pupils' attitudes and opinions about different aspects of school life has become commonplace. As the introductory quotations indicate this has not been without comment or controversy. For some the production, analysis, circulation and use of data have become essential to the project of formal mass state education and its improvement. For others it represents a new tyranny, a challenge to teachers' professionalism and is of little meaning to pupils. And yet, the proliferation of data and the process of making schools 'data-centric', or databased and data-based continue.

The presence of data in schooling is not itself new. As Lawn (2013) and fellow contributors demonstrated, the widespread production and use of data can be traced back to the mid-nineteenth century and the coming together of science, the state and systems of education. Used for financial budgeting, representing the system for administrative planning, then analysis and comparison there are slightly different stories that can be told between different systems across the world (this is not a European or even Anglophone story alone). Statisticians quickly become important as experts skilled in the finding of patterns, but it is only more recently that the ability to understand and interpret the results of this data work (such as by parents in league tables) has broadened. One notable early example is the production of reports and tables displayed by the American representatives at the 1878 Paris Exposition, an innovation which no European country was said to be able to match (Lawn, 2013). With the impression of objectivity and rigour, the production of data appeared to circumvent impasses of ideology, values or politics and allowed a means of 'seeing' the state of an education system in order to (better) govern it. Not that this data was typically public: it was for the statistician, the bureaucrat and the politician.

However, whilst one could, as Lawn and contributors (2013) have done, trace a genealogy of data in education systems it would be a mistake to assume that this story is one of simple continuity with little or no change. It would also be a mistake to argue that the changes of the last decade or so are merely superficial with respect to that longer history. The advent and embedding of digital technologies (Facer, 2011) in schools – in particular networked computers – along with the increasing ease of data storage and transmission between servers has provided the socio-technical conditions in which a proliferation of circulating data could occur. In another sense the rise of data is as much a matter of linguistics, with a diverse set of recorded knowledges becoming collected under the term, and with actors, such as school secretaries or deputy heads, who dealt with these diverse knowledges being re-named as ‘data managers’. That there is talk of ‘data’ rather than merely grades, attendance levels or budgets is part of the change wrought in contemporary education. Resonant linguistic and socio-technical change is such that it is meaningful to talk of the rise of data both in terms of quantity, of the reach of their circulation and in the importance attached to them.

Education is not unique in seeing such a proliferation or in the rise of voices about the potential to be embraced or the dangers to be faced in such change. A ‘data revolution’ (Kitchin, 2014a: xv) is underway with the production of “a wide, deep torrent of timely, varied, resolute and relational data that are relatively low in cost and, outside of business, increasingly open and accessible” and the assemblages that sustain and are recursively shaped by them. Data-based living, as a life enabled by and lived against that which is amenable to measurement and enregistration is seen in a variety of spaces. From supermarkets to online dating, from the control of borders to life-logging through social media and from warfare to health care, the proliferation of data is increasingly important in the transformation of institutions and the reconfiguration of lived experience (Kitchin and Dodge, 2011).

Big Data and data-based activity more generally is touted as enabling (at reduced costs) a plethora of desirable futures: Better Governance! Citizen Science! Smart Resource Use! Creative Knowledge Economies! Personalisation of Services! Improved Accountability! Post-ideological Solutions! Visions of the future – of smart selves, cities and nations (Kitchin, 2014a; Wilson, 2015) become both envisaged and realisable

through data. In this way the production, circulation and use of data become symbolic of idealised futures and as a way of making those futures. However, such data-based activity is not only a vision of imagined futures but already present in myriad ways. It is in the everyday ways in which futures are imagined and contested and attempts made to realise them that our orientation in and experiences of the present are made. These processes come under particular kinds of scrutiny in schools. Where a child's labour has been defined as being the work of becoming (particular kinds of) adult, one of the roles of schools becomes ensuring and maximising this transition. Both the child and the school are characterised by this sense of becoming, of futurity. Education, when understood as a particular kind of directed relationship between teachers and pupils, is held as the means of realising incrementally these nascent imagined futures in the present. An emerging and now highly significant way by which futures are being imagined and enacted in schools is through the increased production and use of data.

Although academic texts have been written which detail the technical aspects of dealing with data (Kelly & Downey, 2011), and 'how to' books for school leaders (Earl and Katz, 2006) and/or policy makers (Schildkamp et al., 2013) it has been argued that academic research about schooling has been "generally slow to respond to the rising significance of data" (Selwyn, 2014:4). While the emerging literature and early survey pieces (such as Selwyn, 2014) are instructive, some remain speculative and agenda setting, while those with an empirical basis have tended to focus on the macro-scale (Ozga et al., 2011) or publically-available information and media reports, with less sense of how the life of data and data-based living are negotiated in detail, in place and in practice. Repeatedly absent from these texts are the voices of young people themselves. This thesis seeks to meet these omissions by offering a deeply-textured account from one school of the role that data are playing in the process of education and the production of futures. That the lived experiences of actors in school do differ, sometimes quite radically, from the aims of policy or the programmatic views of the existing literature is suggestive of the need to pay attention to the unintended effects of data and not only deconstruct the rhetoric of intended and expected effects. Through this research I have sought to explore the kind of staff and pupil subjectivities anticipated and produced through this 'data work', and relate this to wider questions about futurity and the purpose and politics of schooling.

Influences

Rather than seeking to make sense of what I encountered with recourse to one theorist's work (claiming I was conducting a Foucauldian analysis for example) I labour with the inheritances of several. (In fact, don't we all labour with, or indeed against, the inheritances of all those who raise us, teach us, form us whether we acknowledge them or not through our referencing systems?) Rather than drawing on particular concepts or general theories I compose from these writers might be better understood as an ethos or disposition towards the research. Though not always brought to the fore in the thesis the reader may detect the influence of Paulo Freire, Michel Foucault and Bruno Latour amongst others. I will briefly consider each.

In Freire (1996, 1998), particularly in *Pedagogy of the Oppressed*, I find someone who orients me to the question of what it means to accept the 'vocation' of being and becoming (more) fully human. Though this is not without problems (over what it means to be human, let alone thinking about processes of humanisation or dehumanisation), I find in his reflections on the power of names and naming and acting as an architect a resonance with Christian theology. In the making and re-making of the world he sees a close connection of word and world following the speech-acts of the creating *Logos* (Genesis 1 and 2, John 1, The Bible). In naming the world and (so) changing it humans are bearing the image of God in Christ, the Creating Word and so fulfilling the 'vocation' of the cultural mandate given to humanity (Genesis 1:28, The Bible). While the reader need not share my or Freire's theologically-informed stance it may nevertheless be helpful to recognise the attention in the thesis I give to a close reading of words as world-building and of world-building as it is traced in our language. It is also reflected in a commitment to hear the voices of all, as those who are architects and sense-makers, even if the ability to act is limited in various ways. I sought to be attentive to ways in which pupils are themselves theorists of data and those who shape the production and use of data in the school; I doubted that data was simply 'done' to them. Adopting a pedagogic approach to the research I took up Freire's call for a problem-posing education in which dialogue with pupils and teachers necessitates a critical dialogue which poses data - the school even - as something to be puzzled at with all participants as we learn from and teach each other. This ethos is also reflected in the concern that the young people and teachers not only be 'objects

of inquiry’ but through taking a participatory action research approach in one part of the research to make space for them to inquire, make knowledge and seek to enact meaningful change (as indeed they already do).

Following in the steps of Foucault took me to *Discipline and Punish: The Birth of the Prison* (1979) and to the ‘examen’ (examination) and the often spatialised interventions which follow them in ‘Foucault’s schools’. I follow his attention to micro-technologies of discipline and the production of the self through assessment, observation and the examination and note the individualisation he finds as the result. More than the gaze, confession and ‘truth-games’ it is his accounts of the processes of subjectification that I find particularly instructive. It is the tension between being a subject (with connotations of agency) and being made subject (to the will and desires of others) that are particularly evident in the thesis. Indeed, work on ‘late Foucault’ suggests that the analysis of power at work in *Discipline and Punish* need not be understood as hopelessly pessimistic – that is power as pure domination – but is often at the same time also enabling particular subjectivities that may be experienced as empowering (Kesby, 2007; Gallagher, 2008a, 2008b). This is not to say that the technologies of discipline are unproblematically creative, merely to note that they are rarely doing only one thing and as such are not coherently diminishing or emancipatory.

Such messy complexities and an attunement to multiplicity and the role of non-human actors in assembling the social comes from my engagement with Bruno Latour, and the work of Annemarie Mol and John Law. If Freire and Foucault help me pose the question about the experiences of different people in the school of ‘data-based living’, Latour and work in an Actor-Network Theory vein helps me to form a related question about the life of data in the school. More fundamentally, to ask what data are doing in schools is already to have considered it meaningful to ask for non-human actors to account for the role they play in the recomposition of education and school spaces. Latour (2005) argues that Actor-Network Theory is, despite its name, less a theory about relations and more a method of following ‘actants’ to see what they do. In following him, I seek to avoid assuming, in advance, that we already know what data are doing. In fact, as Latour suspects and as I will go on to describe, although the

pairing of 'life of data' and 'data-based living' are a handy shorthand, they are not so neatly separable and in this is something of why the process of research has been so interesting.

Questions

The writers I have mentioned appear at various points in the thesis. More than this however, their modes of paying attention and subjects of focus influence the ways in which I observe, listen, analyse and write. They, along with all the other sources of influence, have had a part to play in how I formed my research questions, conducted the research and wrote the thesis. As might be expected, the research questions evolved over time. My aim was to gather empirical material concerning changes in the production and use of data in the making of young people's and schools' futures. I intended to do this through answering the following questions:

- What kinds of data are produced in schools?
- What kinds of data identities, spatialities and roles are produced?
- Are the data produced inherently temporal?
- What is the relationship between assessment, data and futurity in schools?

These could be summarised as:

- What roles are data playing in the process of education and the production of futures?

Whilst these questions did animate the research the iterative and interactive process of research in the school, reading and writing allowed me to focus the question as:

What is the contemporary proliferation of *data*,

as one set of material-discursive elements which

contribute to producing the space of the *school*,

doing to the *relationships* between teachers and pupils

and their imagining of *futures*

which make possible, or render difficult, the *formation*

of an *educable subject*?

The components of this question will be unpacked in the following chapter but for now I note that the question brings together the concerns about what data are doing, the experiences of pupils and teachers, futurity and the formation of subjectivities. I will now turn to how, in seeking to answer this question, the thesis makes contributions to education studies, the sociology of education, data studies and the geographies of education, childhood, youth and young people, futurity and data.

Contributions

In relation to the omissions I mentioned above this is, to my knowledge, the first deeply-textured account of what data are doing in schools which is based on ethnographic study and which hears from pupils themselves. It holds to the importance of tracing the everyday lived experiences of data in schools as they are worked out in particular circumstances rather than producing generalised accounts which overstate their conclusions or risk simplistic calls to make data (more) visible so as to resist them as furthering already known logics in already known ways.

For geographies of education this research outlines new avenues of study and seeks to show (with Kraftl, 2013a) that attending to the conditions for/of learning itself is important as these are shaped by and shape processes which are geographical. Instead of serving functionally as a site for researching other topics the school is a valid focus itself, and despite calls to pluralise the spaces of education to go beyond formal state schooling, and the spaces of childhood beyond the school, such schools nevertheless represent significant spaces of contestation, change and meaning-making. In relation to this, accounts of what data are doing in schools, are not an interesting layer to add on top of existing accounts but entail the recomposition of the spatial resources assembled as, and in relation to, a school: relationships between teachers and pupils, curricula, modes of governance at a variety of scales, the introduction of new state and private actors and new kinds of experts and expertise. All of which entail the need for consideration of what might constitute an ethics of care in relation to data.

For those that study education, in general, and geographers of education, in particular, it is a significant shift to argue that a school can be characterised as a 'data centre'. However, rather than dismissing data as an administrative or bureaucratic irrelevance or a matter of only technical interest, it is important that future studies of educational

spaces in general, and of schools in particular, consider the increasingly significant roles that data are playing. It is not simply that the data themselves are noteworthy, though they are, but perhaps more significant are the existence of the data assemblages which make the production, circulation and use of data possible and which are themselves shaped by the data they produce. To follow the data and listen to how people experience this is to begin to understand how schools are changing and have changed and what the implications of this might be.

For geographies of childhood, youth and young people the thesis outlines changes that are taking place that have a profound impact on schooled young people's understanding of themselves and implications for their present and future life-worlds. The ways in which pupils come to make sense of the data made about them and how this can change the ways in which they think and of what they believe themselves to be capable is significant. Still too the ways in which data occasion sadness, anger, confusion, surprise and joy. That teachers are made responsible for pupil's learning comes with a concomitant sense in which children are asked to care for their teachers through co-operating to produce the data expected of them. That teachers are made dependent on pupils' efforts complicates accounts of adult power and children as dependent. It furthers the literature on the social construction of childhood and agency of children but complicates these stories as young people, teachers and data are all, at points, active subjects and at other points objectified. For this reason accounts which play off data-centric accounts and people-centric accounts of data would be to miss the dynamic nature of agency as it is being outworked in this context.

For the emerging geographies of data I argue that there are other scales than the quantified self or the smart city through which to make sense of data and offer the site of the school as one of them. Though in part I am arguing that data both connect and blur different scales, the smart city is not undifferentially 'datafied' and an institutional focus (after Philo and Parr, 2000), amongst others, helps pluralise accounts which can tend to focus on the programmatic rather than lived experiences of data production, circulation and use. Further, the thesis contributes by extending accounts of the quantified self which have tended to presuppose that self to be an adult. I contribute to theorisations of digital personae emphasising the need to move beyond ideas of

data doubles to data multiples (here 'pupil multiples') to account for the many kinds of data that are assembled, sorted and sifted in producing a data-based pupil about whom decisions can be made.

In contributing to geographies of data, and data studies more generally, the main effect of data that I trace through all the empirical chapters is the way in which data bundle and bind. Data bundle times and spaces to make them knowable in the present and as a place which allows for decisions to be rendered. The demand to produce particular data binds people and their futures together. However, though data affect bundling and binding, this effect is contingent and requires ongoing labour; and where this breaks down or is removed, misalignments, divergences and slippages occur. I offer a means of thinking through the various ways in which actors in the school made sense of the possible relationships between places and times, bodies and bytes, and between the different digital traces which can diverge and blur as well as cohere.

To literature on futurities I add an account of the everyday ways in which relations and practices of future-making come to take place in schools. Future-making is not free-floating flights of imagination but shapes and is shaped by the material-discursive resources actors have available to them. I differentiate between explicit and implicit futures and reflect on the ways in which future-making comes to be related to the production and use of data. Where futures have been planned for, predicted and pre-empted on the basis of elite access to and decisions based on data, the proliferation of and availability of such data makes these means of engaging with futurity something that can and must be taught – a pedagogy of futurity. As such this thesis contributes to understandings of the ways in which non-elite or perhaps better non-expert actors take up data in engaging with futures. I also advance a novel theorisation of progress 'after the affective turn' in which I argue that progress as a relation to futurity is not sufficiently understood as developmental fact, logic, ideology or discourse but as something felt. In this way I contribute to work which seeks to understand the way that people engage with how futurity and the realisation of futures feels and that emotions sustain and challenge future-making practices.

For geographers more broadly this work represents a critical case study which informs discussion about the restructuring of education in contemporary society, the making of

scale, and the formation of (self)-knowledge workers for a knowledge economy. While some have argued that data in schools is individualising and dehumanising I both challenge this and also consider what it means to care in the context of data. As such, I contribute towards an ethic of care in relation to data.

Thesis outline

In Chapter 2 I locate the research within literature on the geographies of education in what I call the 'awkward geographies of schooling', in which schools are central but decentred. I contend that it is important to avoid the elision of education with schooling and teaching with learning and argue that these distinctions make it possible to trace the work that data are doing in the formation of an educable subject. The attention I give to changes in pedagogy, and teacher/pupil relations, is not merely a matter of educational or sociological concern as these are outworked with socio-material implications for the education spaces of the school. I take up the insights of geographies of childhood, youth and young people in exploring temporalities of childhood, in which schools are characterised by the narratives of 'becoming' that are attributed to their children. Through this I argue that education and futurity are resonantly co-constituted and trace this through work by geographers of education which take emotions and materialities as their focus. Finally, I locate the research in and against the emerging literature on data in schools. I press for the need to understand both what data do in schools and how people make sense of (their) data and how the two relate.

Chapter 3 takes up the challenge of how to make geographical knowledge about both the life of data and data-based living and the different ontologies that might be assumed to underpin this framing. I justify why it is both necessary and possible to make claims from one school as the site of the research. Having described the school I also introduce the kinds of data encountered in, and in relation to, the school. I discuss the use of observation, interviews and a short participatory action research project to engage with the key problematics of the project and consider the ethical implications of this approach. Outlining the prior experiences which brought focus to the research I consider the relevance of researchers' own educational experiences as an important matter of positionality that is rarely given explicit consideration.

In the first empirical chapter, Chapter 4, I provide an account of the multiple ways in which education and futures are co-constituted in the school – not all of which are overtly data-based. This provides a means by which to understand the particular roles that data are playing in the process of education and the production of futures. I argue that some activities in the school proceed on the assumption that the possibility of realising individual futures (of pupils or teachers) is dependent on securing the future of the school as ‘successful’ which are based on producing the (right kind of) data. In the everyday of education in schools it is possible to make a distinction between the presence of explicit and implicit futures. Explicit futures are those in which particular, nameable visions are taught, imagined and actualised and tend to consider futures which find their realisation beyond the school. Implicit futures are those in which future-oriented temporalities and techniques are embedded in the practices of schooling. While some futures become contingent on the production of the data, in others existing data are used to try and realise particular futures over others.

Chapter 5 takes this broader frame of how data production becomes part of the means of achieving particular futures and part of the practices of future-making and provides a detailed account of how this comes to take place in the school. Here, teachers are increasingly asked to be responsible for a pupil’s learning and there is a proliferation of data as a means of ensuring ‘evidence-based’ accountability and intervention. I argue that there is a ‘shifting grammar of agency’ in which it becomes difficult to attribute learning achievements to a single acting subject, where at points data, pupils and teachers are sometimes held as subjects and objects. In an environment shaped by competition, international comparison, high-stakes testing and challenging economic conditions pupils and teachers are bound together through the need and desire to produce the data expected of them. At times there is coherence between desire, ability and effort on all parts but slippages between a pupil’s self-perception, a teacher’s judgments and ‘what the data says’ lead to contestation. I argue that there is a need to move beyond theorising the digital personae of pupils as ‘data doubles’ rather as the ‘pupil multiple’.

In Chapter 6, I work through a particularly dominant articulation of expected futures through the idea of progress. Here I argue that data are used to create and maintain a

sense of progress and the affective relations that are associated with these sensibilities. This is not progress solely as developmental fact, logic, ideology or discourse but as felt. I use the term 'atmospheres of progress' to describe the occurrence of spatially-specific shared senses of progress-making (or the lack of it) that are collective and yet also individualising. I explore the difficulty of maintaining this atmosphere and highlight the ambiguous quality of the data employed. I turn then to pupils' language of 'push' to describe the double move of being pushed and pushing oneself as their experience of this atmosphere. To find oneself outside of this atmosphere is to be made subject to interventions and yet there is an 'uneven geography of push'. Though a move to progress has extended the attention of staff to a wider array of pupils it is still experienced unequally: while being the object of teacher's attention may be unwelcome, not to come to the attention of teachers may be worse. Some pupils propose access to more data at greater frequencies.

In the final chapter, Chapter 7, I take up the question of what it means to care in the context of data, taking up pupil-interviewees' thoughts about care in the school. In returning to the ideas of coherence, divergences and blurring I argue for the need to re-think assumptions about what it means to care in schools for the 'pupil multiple' and in circumstances where pupils become asked to care for their teachers through data. I then move to summarise the arguments I have made and the contributions of the thesis to geographies of education, geographies of childhood and youth, to futures studies and to work on the life of data and data-based living.

Chapter 2 | Literature Review

Schools, as institutions, represent the spatial assembly and arrangement of a variety of resources: role-based relationships (between teacher and pupil for example), techniques of power, objects and discourses. This assembly and arrangement come together in ways which increasingly seek to produce not only a schooled subject but an educable one. This is a distinction to which I will return. That subjectivity, and the relationships, techniques, objects and discourses which enable or hinder its formation, is spatially produced and historically contingent. As such this subject is shaped – is interpolated – by the profound restructuring that is taking place in advanced capitalist education sectors (Thiem, 2009). I argue, in this chapter, that in attending to the formation of the educable subject (which might have been thought of as matter of pedagogy only), we are also attending to geographical processes of socio-spatial transformation: neoliberalisation, the production of knowledge economies (Thiem, 2009) and the (re)making of scale.

The specific means by which I will explore these changes is to consider the contemporary proliferation of data in schools. I ask why there has, over the last decade in particular, been a proliferation of data and what it means for pupils, teachers and their relationships, for schools in the formation of educable subjects, and in particular how data does work in relation to futures. Through this I attend to these ‘broader’ socio-spatial changes. The changes in schools which result in, and are shaped by, a proliferation of data is only very recently beginning to gain wider critical attention in the discipline of education (Selwyn, 2014; Selwyn et al., 2015; Sellar, 2014; Williamson, 2014a, 2015a); it has not been considered in geographies of education despite the way in which data bundle diverse sites as knowable places and so (re)make scale, are implicated in the production and transformation of learning spaces, and circulate within the classroom and across the globe.

Over the course of this chapter I synthesise literature from geographies of education, geographies of childhood, youth and young people, data studies and education studies. In so doing I aim to unpack the formulation of the research question I set out in the previous chapter, identify the need for this research, and set a context for the research design that I formulated.

The awkward geographies of schooling

Whilst it is arguably still the case that, as Collins and Coleman asserted in 2008, “schools have received less attention from geographers than institutions such as the clinic and the hospital” (2008: 281), the intervening years have seen a growing literature about school spaces emerge. However, this work is positioned somewhat awkwardly within geography in general and within and between geographies of education and geographies of childhood, youth and young people more specifically. One reason for this is that geographies of education (and within that, work on schools) have not had the same coherence as other subdisciplines (Thiem, 2009; Holloway et al, 2010) such as the geographies of health or the more recently emerging children’s geographies (Matthews 2003, Vanderbeck, 2008). Indeed, Thiem argues that there has been “only a fragmented, episodic, and insular literature” until recently and as a result “education has remained on the margins of critical geographical thought” (2009: 154). Holloway et al. offer a more positive reading of the wider state of research arguing that the geographies of education have avoided “subdisciplinary confinement” by consistently situating “education in the context of broader debates within the discipline” (2010: 584). In either reading, Anglophone geographies of education have not attained the same coherence and sense of lively tradition as in other languages (see in particular German language research described in Holloway et al, 2010).

A further reason for the ambiguous position of work on school spaces within geographies of education is that schools are only one site of education among many, though schools and education are often conflated (Butler and Hamnett, 2007). Contemporary and historical sites of education are highly diverse, particularly if both formal and informal spaces are considered (Holloway et al. 2010, 595; Kraftl, 2013a, 2013b; Mills, 2013, 2014). They can be taken to include the home, religious sites, the workplace (whether field, factory or office), prisons, neighbourhood spaces as well as designated spaces of learning that are typically arranged by age group (pre-schools, primary schools, secondary/high schools, colleges and universities). One can add to those sites ‘alternative’ forms of education alongside or in place of ‘mainstream’ schooling and those sites that wrap around school, such as after-school care and youthwork, internship and volunteering settings. It quickly becomes possible to see that schools can be understood as both central to many people’s educational

experiences and yet also marginal when held in comparison to other times and spaces of education during the life course, across the world and throughout history. So, within geographies of education a disparate, or perhaps more charitably, a resolutely plural vision of the subdiscipline, relocates mainstream state-funded schools as one educational site among many of interest to geographers. They are both central and decentred.

In parallel fashion, concerns have been expressed and taken up by geographers of childhood, youth and young people about the need to go beyond the “home, school and playground” as spaces of/for children and the construction of childhood (Matthews and Limb, 1999). Again there is the tendency, as with geographies of education, to pluralise the spaces of childhood beyond those notionally considered most pertinent by adults. That is to say children live in, shape and are shaped by many more spaces than the home-school-playground triad. Moreover, their experiences can be taken to matter in decision-making processes about them (both the children and the spaces). In terms of the agenda to assert the tenets of the (now not so) ‘new sociology of childhood’ – most simply that childhood is socially constructed, and that children are active (and indeed competent) social agents (James et al., 1998; James and Prout, 1997) – this break from home-school-playground was important. It was to assert that children could be understood as competent social actors and as possessing particular experiences of spaces and concerning issues that are not privatised to the home or particularly associated with childhood like the school and playground. The assertion was that children and young people matter and could speak to public matters. However, the call of Matthews and Limb to go beyond home, school and playground came at the same time as Valentine noted about schools that “there are surprisingly few examples of geographical studies of this particular setting for children's lives” (2000:259). Again, not only in the geographies of education but also in the lives and geographies of childhood, youth and young people schools are central but decentred.

The arguments made for geographies of education and geographies of childhood and young people to go beyond school spaces are important. Yet, the risk is that research into schools themselves becomes overly marginal when schools still affect so many,

and in enduring ways, and at a time when formal education, globally, and in the context of this study, in England, is experiencing significant restructuring (Thiem, 2009). For Collins and Coleman (2008), the study of school spaces themselves is of importance because of their central place in the lives of children and young people, in the organisation of family life, and in shaping social identities. Thiem highlights the “central roles in state-building, economic development, social reproduction, and cultural politics” (2009: 154). These two different kinds of reasons for the relevance of schools to geographers highlight Thiem’s formulation (2009) of a long running difference between the inward looking geographies of education, where schools – and particularly young people’s experiences of them – are the phenomena to be explored and explained and more outward looking work which sees schooling as a means to ‘think through’ education to ‘external’ processes of economic, social and political change. The suggestion is that up until very recently school geographies/geographies of schools have been overly inward looking and have therefore had less to say to the wider discipline. Similar concerns are expressed about children’s geographies and the tendency towards the ‘micro-scale’ (Ansell, 2009) which risk rendering parochial children’s worlds and the geographies written about them hindering their potential relevance both politically and to other areas of geography. This is to insist on the importance of work which considers “the macro-scale, structure-based geographies of childhood as shaped by broad-brush political-economic and social-cultural transformations” (Philo, 2000: 253).

Work on schools then negotiates these inward and outward foci. It risks marginalisation from the wider discipline where it treats young people and/or schools themselves as the subjects of study (as producing knowledge which is ‘too’ localised, inward, agent-focused and devalued as childish/child-centred). Further, it risks marginalisation from geographies of childhood and young people when it treats pupils as objects of study (as valuing young people and their perspectives only so far as they speak to global, outward, structural and adult[ist] issues). Yet, the negotiation of scales and the issue of who or what is brought to the fore as social actors are not unique to the study of schools. Similarly the pluralisation impulse can be seen across subdisciplines. However, the way in which these issues play out offer an account for the apparent and acknowledged significance of schools and also the relative

marginality/marginalisation of research about them in geography, within geographies of childhood, youth and young people and even within geographies of education.

This research tries to hold both these foci in understanding the school as a site of interest in its own terms and as a place which reflects wider change and through which structural political-economic and social-cultural transformations are made. Moreover, I resist the charge that work on the socio-spatial interactions within schools and the formation of educable subjects must fall down on the 'wrong' side of the dichotomies outlined above. Whilst the dichotomies playing out in this discussion may be instructive, in practice they are never so neatly separable but rather are mutually constituted and interpolate one another. Thus, following the work of Kraftl (2013a), I shall endeavour to show that there is no incompatibility between the concern of Holloway et al. to "move the subjects of education – the children, young people and adults involved in learning and teaching – into the foreground" (2010: 594) and Thiem's call for 'outward-looking' geographies in which education offers a "constitutive moment or a critical case study of sociospatial transformation" (2009: 154). Indeed I will argue that what it means to be a teacher to a pupil, or pupil to a teacher and even to learn is inseparable from the socio-spatial transformations that Thiem highlights. What I do reject is any call to use school spaces *only* as a 'stage' on which to play out an investigation of some 'external' problematic. My point would be simply that 'the external' is never only 'outside' and that geographers fail to recognise the multiple positions the people associated with schools occupy if geographers research and write them only as objects of enquiry.

In attending to the multiple positions occupied, I follow the work of Bordonaro and Payne (2012) on 'African children and youth' who talk of 'ambiguous agency' in the context of deviancy from global notions of childhood, such as the examples of child-soldiers, child-prostitutes or child-headed households. Though not rejecting 'the new sociology of childhood' (James and Prout, 1997) and its implications for understanding young people as agents, as the subjects of their lives, they engage with the 'problems' children's and young people's 'ambiguous agencies' "pose to social interventions, and accepted morality" (Bordonaro and Payne, 2012: 366). In these contexts objectifying children as subject to collective forces can be held necessary to justify intervention or

avoidance of moral blame and criminalisation. More broadly, the assertion that young people exist as active social agents - rather than figures of lack or becoming - can make it difficult to acknowledge the ways in which young people's lives are circumscribed (Vanderbeck, 2008). When seeking to account for the multiple roles and positions different children occupy, often simultaneously, the possibility of ascribing to children either agency, or lack of it, is rendered problematic. This research seeks to be attentive to the play, the flightiness, of agency and subject/object relations.

To summarise, this work seeks to hold as ambiguous the subject/object mode of analysis and so to hold in productive tension the importance of listening *to* and thinking *through* both young people as pupils and adults as teachers. The research is positioned to contribute to geographies of education and childhood, youth and young people in taking as its subject *and* object the decentred but nevertheless highly significant school and the relations conducted in and through these spaces.

Locating the research in geographies of education

Whilst some of the geographical literature on schools is disparate, there are some clusters which can be adduced, some of which are of particular relevance to this research. In the following I draw on the review work of Coleman and Collins (2008), Holloway et al. (2010), Holloway and Jöns, (2012) and my own selective searches of Anglophone literature. To give a sense of the spatial diversity of these studies I will add the area of study, as specified by the paper, to the references. Though more international than might have been assumed, concerns that Anglophone literatures tend to focus on Anglo-American geographies of education appear to hold true (Holloway et al. 2010: 587). It is important to acknowledge this partiality, that I am influenced by and add to it, whilst recognising the important contribution the literature nevertheless makes.

A major theme concerns schools as sites of social (re)production. This encompasses a wide variety of social identities and relations. There has been the work on *class* (da Cunha et al., 2009, Campinas, Brazil; Reay, 2007, London, England), *race* (Burgess and Wilson, 2005, England; Harris et al, 2007, Birmingham, England; Johnston et al., 2007, Bradford and Leicester, England, Riley and Ettlinger, Columbus, Ohio, USA; Thomas, 2005, Charleston, South Carolina, USA, 2008, Los Angeles, California, USA) and

indigeneity (de Leeuw, 2007, British Columbia, Canada; Van Ingen and Halas, 2006, Manitoba, Canada), *gender* (Ansell, 2002, Lesotho and Zimbabwe; Evans, 2006, Liverpool, UK; Holloway et al. 2000, South Yorkshire and Cornwall, England; Jeffrey et al., 2005, rural north India; Valentine, 2000, northern England), *sexuality* (Holloway et al. 2000, South Yorkshire and Cornwall, England; Hyams, 2000, Los Angeles, California, USA; Valentine, 2000, northern England), *disability* (Holt, 2004, England, 2007, UK; Holt et al., 2013, England; Worth, 2013, UK) and *faith/secularity* (Collins, 2006, Surrey, British Columbia, Canada, 2007, Canada; Dwyer and Parutis, 2012, England; Freytag, 2003, New Mexico; Hemming, 2011, north of England; Kong, 2005, Singapore; Valins, 2003, UK). At their best they take sites of education as more than staging for social processes. They contribute to understandings of the relationship between spatial and social re(production) in that the school is not merely a fixed container in which social processes are outworked but the school itself is changed and changing.

Similarly work on eating habits and body image (Evans, 2006, Liverpool, UK, Evans and Colls, 2009, UK; Pike, 2008, Kingston upon Hull, England), friendship and social bonding (Burgess et al., 2008, England; Worth, 2013, UK), martial formation and family composition (Ansell, 2001, Lesotho and Zimbabwe, 2008, Lesotho; Hyams, 2000, Los Angeles, California, USA) connect these processes of socio-spatial re(production) to the national imperatives that are taken up in the schools-based literature on nationalism, citizenship and mediating difference (Benwell, 2014, Argentina and the Falkland Islands; Gagen, 2015, England; Hemming, 2011, north of England; Mitchell, 2003, England, Canada and the United States; Pykett, 2009, Bristol, England, 2011, UK; Kong, 2005, Singapore; Wilson, 2013, 2014, Birmingham, UK; Wood, 2014, New Zealand). Again, it is where this work goes beyond the school as a methodologically convenient place for research (as microcosm of society, or an insight into ‘the future’ of the nation) that the work contributes most to the geographies of education and learning.

Finally another set of literature examines less the school itself but inequalities around issues of access to educational spaces (Allen et al. 2013, Brighton and Hove, UK; Baschieri and Falkingham, 2009, Tajikistan; Basu, 2007, Ontario, Canada; Bradford, 1990, England; Cao, 2008, Gansu, Western China; Gibson and Asthana, 2000, England and Wales; Hamnett and Butler 2011, East London, England; Harris et al, 2007,

Birmingham, England; Harris, 2012; London, England; Johnston et al., 2007, Bradford and Leicester, England; Taylor and Gorard, 2001, UK). While this work understandably focuses on that which is exterior to a school as I will go onto to show in Chapter 4 these issues of access and conversely a lack of demand for school places are critical in the spatial arrangement and assembly of the resources of the school and ideas about the future.

Overall, these literatures take existing categories (though not as essentialist) and explore how they are made and remade, known and experienced in schools. The school is sometimes yet another site to explore the phenomena in view, in others the school is the phenomena to be explored and the role it plays in society with the social category a means of interrogating the school. Most is qualitative in nature although much of the work on access engages with the quantitative geo-spatial data available about schooling. Whilst I include the list above to offer a survey of the variety of geographical work conducted predominantly by Anglo-American geographers through schools, I note with Kraftl (2013a) that little of the work above asks how education *takes place*. He finds that “most geographical studies of education concentrate on what happens *around* learning” (2013a: 441) but as I shall argue bracketing out learning (as a pedagogic issue) and learning relationships (as sociological) is to ignore the ways that each of these shape, and are shaped by, the production of the space of the school. They are not a-spatial or unchanging through time and this is a point worth labouring.

Work in geographies of education in alternative (Kraftl, 2013a, 2013b) and volunteering (Mills, 2013, 2014) settings show that learning relationships and the spaces which constitute them are highly variable. Rather than being between a teacher and pupil, learning may occur in peer relationships, or between other adults and children, like parents or other members of a local community, such as a ‘scout leader’. Further, they need not include children at all, such as learning in adult-only workplaces. Each of these learning relationships, and the learning that results, are constituted differently in and through the different spaces in which they take place. This work that pluralises the geographies of education shows that learning and the relationships that enable and support it can be done otherwise and so have the effect

of 'provincialising' or denaturalising education as it *takes place* in 'mainstream' schools. It is therefore a mistake to conflate education with schools and learning relationships with that of teacher and pupil. To put it slightly too simply, it takes a school to make teachers of pupils and pupils of teachers and teachers and pupils to make a school. As such, attending to learning and to the teacher-pupil relationship is a matter of geographical concern because changes to one are always at the same time changes to what is assembled and arranged as 'the school', as a *socio-spatial* achievement. So, one way of understanding the proliferation of data in schools is to ask how that proliferation changes what a school *is* through looking at and describing changes to learning relationships. In this way a proliferation of data represents changes to the socio-spatial achievement of the school as it is assembled and arranged and therefore of what 'the school' can do.

The studies, which I find particularly instructive, do this work in a variety of settings, many of which are informed by readings of Foucault. Holt (2003: 119) for example "emphasises the importance of schools as unique moments in space and time to everyday practices of inclusion and disability". Further, she attends to the classroom micro-space as a key constitutive site of socio-spatial identities of young (dis)abled people (Holt, 2004) showing that they are 'porous spaces' influenced but not determined by "'powers' and 'resources' emanating from a variety of institutional scales (global, national, local)" (2007: 798). She finds that they can be positively transformative. In this understanding, schools are not only spaces given to ensuring young people's (appropriate) becoming, schools *as spaces* are becomings (Holt, 2007: 798). Though schools are typically rigidly hierarchical in their organisation they are nevertheless transformative spaces and being transformed in line with various imperatives. In later work with Lea and Bowbly, Holt et al. (2012) outline research about schools as sites of normalisation drawing on Foucault, as productive of normal and abnormal bodies through their (dis)ability to conform to idea(l)s of acceptable behaviour. They describe the complex geographies of moves to include young people with special education needs (or mind-body-emotional differences) not only on the basis of human rights or future social inclusion as adults but also more instrumentalist concerns about the potential for young people with such differences to participate in future paid work. However, in contrast to some educationalists (Perryman, 2005, 2006;

Ball et al., 2012; Ball, 2015) they at are pains to show from a broader reading of Foucault's work (Gallagher, 2004, 2008a, 2008b; Philo, 2011, 2012) that norms (and techniques of power more broadly) are "creative as well as regulatory" (2012: 2202). This is important because while some geographical accounts foreground interesting power/resistance stories (Gallacher, 2005; Metcalfe et al, 2011; Pike, 2008; 2010) and complicate oppositional narratives of adults as the exercisers of power and children as resisters, there has been less attention given to what the formation of subject positions allows and enables.

Important and otherwise exemplary work on young people's subject formation (Gagen, 2000, 2004, 2015; Gallagher, 2004; Pykett, 2009a) have, nevertheless, tended to operate in a mode of explication, caution and critique. Gagen, writing about the construction of citizen-subjectivities through the education of emotions based on neuroscientific principals, concludes that, "the privileging of neuroscience as a technology of change in such models requires close critical attention as they increasingly insinuate themselves in the sites and spaces that have traditionally played a pivotal role in shaping conduct" (2015: 150). Whilst I agree with the basic point, this mode of engagement (which is partly due to methodology) occludes the ways in which many of those involved (both pupils and teachers) do, in practice, narrate the results of the techniques of power as empowering rather than oppressive. Unless geographers are to risk writing them off as 'cultural dupes' we need to pay more attention (with Butler, 2004 and in Holt et al. 2012) to calls to understand the conditions under which subjectivities make lives more or less liveable. This is to attend to the geographical and historical circumstances whereby techniques of power that are subject forming, and that might strike some as tyrannical (Ball, 2015), are seen by those who experience them as transformative, preferable to known alternatives, or at least ambiguous (Kesby, 2005; Gallagher, 2008a, 2008b).

An educable subject

A significant contribution to work on the subjectivities formed through schools is that of Michael Gallagher, in his doctoral thesis, "Producing the Schooled Subject: Techniques of Power in a Primary School Classroom" (2004). He offers a detailed reading of Foucault, drawing significantly on his later work, in addition to that from

Discipline and Punish (1979). In what follows I engage with both together, in detail, to assess the contribution of each and mark a point of departure with both.

Gallagher's thesis details a wide range of techniques of power, using Foucault's categories from *Discipline and Punish* concerning the means of producing young people as docile bodies, as individualised through separation, distribution, isolation, and targeting. He examines surveillance through and beyond the emblematic panopticon, noting *contra* Foucault the importance of sound and distributed forms of surveillance. Finally, and going beyond *Discipline and Punish* he considers techniques of the self: self-knowledge, the politics of truth and care of the self and others. Gallagher's thesis provides a wealth of detail which allows for the delineation of Foucault's analysis of disciplinary power as a programmatic aim and its uneven achievement as a practical reality.

In terms of docility, he shows the amount of work that goes into the teacher's (and at times children's and his own) efforts to produce the classroom as a quiet space of stilled bodies and how difficult this can be to achieve. However, while some readings of Foucault seem to conflate the docile body with a passive body (Gallagher, 2005; Pike, 2010) – as quiet, still and in place – Gallagher repeatedly emphasises that attempts to render the body docile are not focused on obedience only but in maximising its usefulness. There is the intention to make the body maximally available for and capable of achieving particular purposes. One can think of Foucault's soldiers' movements in performing their drills practicing for battle, or the children of the Jesuit colleges studiously working (1979: 135ff). This is not the exercise of power for the sake of domination, as an end in itself (though I don't doubt that this motivates the odd teacher!). Instead, as Foucault writes,

"the historical moment of the disciplines was the moment when an art of the human body was born, which was directed not only at the growth of its skills, nor at the intensification of its subjection, but at the formation of a relation that in the mechanism itself makes it more obedient as it becomes more useful, and conversely."
(1979: 137-138)

The purpose is not only obedience but usefulness of some kind and the formation of mechanisms that will mutually reinforce the increase of both. What is the purpose of 'docility-utility' (1979: 137) in a school? Gallagher argues that:

"docility is integral to school practices because the more docile the children, the more efficiently they can be managed within the school system. In particular, I have suggested that a degree of docility appears to be necessary if a single teacher is to communicate knowledge and skills effectively to twenty or thirty children" (2004: 151).

That is to say the purpose of docility is the pragmatic possibility of communication in the current conditions of schooling (not least teacher/pupil ratios) but more than this the object-target is, through training the body, to make the senses and mind available and attentive to receive instruction. The purpose is that the pupils may be taught. This might seem obvious but this assumption will be complicated shortly. Elsewhere Gallagher writes:

"Discipline was used to produce civilised, sociable, obedient beings. But docile bodies were also seen as a means of facilitating the first aim of 'teaching them knowledge'. Indeed, the teachers' various uses of disciplinary techniques seemed to be based on the assumption that discipline was a necessary precursor to learning." (2004: 121)

The quietened body of the child, who sits upright and looks toward the teacher, renders herself available to receive the knowledge the teacher communicates in a didactic fashion. The assumption is that this is a precursor to learning. Foucault's thinking runs along the same lines. Docility-utility achieves, in part, "the supervision of each individual and the simultaneous work of all" (1979: 147). Thus where there is supervision, the possibility of instruction and work to do, it is assumed that the result is to make "the educational space function like a learning machine" a machine which is also "for supervising, hierarchizing, rewarding" (Foucault, 1979: 147).

However, there are a critical set of confluences here: of teaching with learning and of education with schooling. Though the distinction is not total it is of importance because the elision of these concepts occludes a significant change in contemporary pedagogy that refines, extends and yet also challenges the accounts presented by Foucault and more recently Gallagher.

For me, Gallagher conflates schooling with education when he writes that his focus is, “what I have called the 'schooled subject' - that particular human subject, both educated and educable, which schools attempt to produce” (2004:68). He is careful to note, however, nearer the beginning of thesis that his study “is not about education, but about schooling” (2004: 20). He explains this further, “I am not concerned with the way in which power operates in the process of learning (though this would make a fascinating topic of enquiry in itself), but rather in how power operates in schools” (2004: 20). As such his project can be understood as detailing the operations of power that allow teachers to teach and children to be taught. However, producing subjects who can be taught is not the same as producing subjects who learn. Whilst teaching and learning may be concurrent and one may occasion the other, this need not be so. Similarly Foucault tends to assume that where the necessary conditions are set, for instruction and for the practice of exercises, that learning is occurring. This need not be so and a simple example might serve to illustrate the distinction. One can imagine children sitting ‘appropriately’ in their allotted spaces, quiet, with their hands to themselves and with their eyes on the teacher. The teacher may be holding forth on a particular subject and, while the attention given to the body may produce the conditions for instruction to take place, the child may not be listening, thinking instead of the frog they found in the playground at break time. More fundamentally, if the child was listening such that they could repeat back what the teacher had been saying, it may still be an insufficient ground to say that learning had occurred if they do not understand that knowledge or are not able to put it to use in some manner. Indeed, as I go on to explore, the understanding of learning as transmission is one model of learning and increasingly it is not the operating model of learning in school classrooms. This shift, and the socio-spatial processes which impel it, form a significant backdrop to the proliferation of data and development of techniques of power which seek not only in schools to produce:

the *schooled* subject who may be *taught* but also the *educable* subject who *learns*.

In this understanding, making children docile in schools is an important but insufficient condition for making children educable, where the goal is specified learning outcomes and not only that children may be made subject to instruction. Of course, it would be

erroneous to suggest that learning was not the goal of Foucault or Gallagher's schools, merely that their writing doesn't differentiate, as they might, between techniques of power which increase the availability of the body to receive instruction and those which increase the availability of the body to be 'making learning' which implies a more constructivist than transmission-based pedagogy. In fact, as I will go on to describe, some of the techniques of power imply and seek to effect quite different norms of 'appropriate' behaviour than those seen in the schools about which Foucault writes (where talking, moving bodies are those thought to be learning).

Whilst the constructivist, learner/learning-centred education is not new, it has increasingly become the orthodoxy in both teacher training and practice and in models of evaluation (Schweisfurth, 2013). These mark a series of shifts most notably from a focus on teaching to a focus on learning (Barr and Tagg, 1995). This runs concurrently with a shifting relationship of responsibility where the teacher becomes responsible (and so held in relationships of accountability) for *producing* learning. As Barr and Tagg write, "the point of saying that colleges are to produce learning - not provide, not support, not encourage - is to say, unmistakably, that they are responsible for the degree to which students learn" (1995, n. p.). This is not to say that pupils are not responsible for their learning but the responsabilisation of teachers for their pupils' learning at an organisational level and at the level of the individual pupil marks a significant shift. A problem here emerges when considering why this mode has become dominant. This mode has typically been associated with progressive, radical and even revolutionary forms of education (via such thinkers as Dewey and Vygotsky, [Popkewitz, 1998]). Paulo Freire famously described two pedagogic paradigms: 'banking education' versus 'problem-posing education'. In the first, teachers are figured as full of authoritative knowledge which is to be communicated, internalised and reproduced by the pupils who are otherwise empty receptacles to be filled. By contrast, problem-posing education assumes that knowledge is formed through joint inquiry where:

"The teacher is no longer merely the-one-who-teaches, but the one who himself is taught in dialogue with the students, who in turn while being taught also teach. They become jointly responsible for a process in which all grow. (1996: 61)"

The student is acknowledged as a being-in-history, not only one who becomes, and as such they already have experience of the world which is brought to a process of joint reflection, dialogue and action with teacher-learners. Freire contrasts these modes in this way:

“The banking method emphasizes permanence and becomes reactionary; problem-posing education – which accepts neither a “well-behaved” present nor a predetermined future – roots itself in the dynamic present and becomes revolutionary. Problem-posing education is revolutionary futurity. Hence it is prophetic (and, as such, hopeful)” (Freire, 1996: 65).

The question that occurs is: have then education systems, not least in England, seen a radicalisation – a move to revolutionary futurity – through this shift towards a more constructivist mode and one in which the focus is on joint learning and less on teaching? I would argue no, but that there have been what Pykett (2009b: 374) calls, “uncommon trajectories in contemporary education policy”. There are multiple discernible logics which, whilst appearing contradictory, converge in their enactments but retain in those enactments a polyvalent quality. The other logic runs like this: if it is the case that one of the implicit purposes of contemporary education is a ‘sorting function’ to rank people in society and to make them believe that place is justified on the basis of intrinsic ability (Holt, 1977; Rowntree, 1987) then a two tier system could be sustained on the basis that the pupil outcomes match the spread of different kinds of employment. However, as a matter of social justice on the one hand, and national economic competitiveness on the other, the narratives about global competition for work and a shift to a knowledge economy render such strongly divided outcomes no longer tenable. Whilst it is not the case that all must have degrees, the rise in mass higher education is not insignificant here. Rather than acting as a radicalisation of schools it is better to understand this shift as materialisations of neoliberalising forms of new managerialism (Du Gay, 2000; Blackmore, 2010; Peters, 2013) in the name of social justice. Producing or ‘delivering’ learning – for *all* pupils – and the changes to structures, curriculum and relationships are key to the remaking of education in relation to “national competitiveness and the forces and discourse of globalisation” (Ball et al., 2012: 530).

This shift has been being worked through, and productive of shared European educational space, since at least 1999 in the Bologna Declaration and the following Bologna Process: “a declaration of intent to promote cooperation among member states with respect to quality assurance measures, degree programmes and systems of credits” in higher education (Brancaleone and O'Brien, 2011: 502). This was, quite explicitly, to allow for comparable and compatible credentialing systems which could facilitate the movement of students and workers across Europe. Programmatically, at least, the purpose of learning-centred and learning outcome-specified education (according to Brancaleone and O'Brien) is that:

“they quantify knowledge, define accreditation pathways, provide ‘clear’, fixed learning guidelines and expectations, and mechanisms of external accountability, all presented as concrete values.” (2011: 504)

So, whilst materialised in a variety of education settings this represents a restructuring of learning itself and concomitantly the learning relationship. Learning becomes the focus and is rationalised. In tracing the contributions of geographers to thinking through the socio-spatial production of subjectivities in schools I have drawn on a variety of work, much of which is inspired by Foucault. I outlined, however, a set of distinctions that can and have been made with significant socio-material consequences for education spaces. I argued that teaching is distinct from learning and that schooling is distinct from education. I proposed that in the current conditions of most mainstream schools (most significantly high pupil to teacher ratios) that the production of the schooled subject is deemed necessary to occasion the availability of the pupil to be taught. However, I argued that this was necessary but not sufficient to guarantee that learning is occurring. I have sketched out an argument for why a shift from learning to teaching has occurred and suggested that though welcomed by many teachers, who might advocate a more constructivist approach, learning-focused education is not necessarily learner-centred education. Instead, the spread of this pedagogic mode has more to do with a restructuring of education along lines that better suit discourses of global competition and worker mobility.

Implicit in the discussions above are the ways in which education and futures become co-constituted. This can be seen in the work on the relationship between children's

present and future life-worlds. It is also seen in the visions of a competitive global market which become a justification for changes in education. Two ways in which geographers have sought to attend to temporality in relation to education, and futurity specifically, are through a focus on emotions and materiality. It is to this work that I now turn as of significance to the framing and context of this research.

Futurity, emotions and materiality

My research draws on and extends geographies of education which attend to emotions and materiality. These have consistently considered futurity explicitly and it is interesting that they should do so. In relation to emotions and materiality the work of geographers described below takes place in contexts where both have come to be asserted as a problem (or a response to one). In this way the interventions which are described, such as working emotional literacy through the formal curriculum and Building Schools for the Future, deliberately insist on (and justify) action as necessary to create or avoid a vision of the future. Whilst this may be specific to the cases chosen, I would argue that apart from such problematisation it is very difficult epistemologically to attend to what emotions or material objects are doing in the world. This is precisely because when they operate without problem they largely go unannounced (Latour under the name of Johnson, 1988). As such they offer two related means of considering the various relations of futurity to educational spaces.

Futurity and emotions

The literature on geographies of education has been shaped by and reflects wider turns in geography. One of these is the 'emotional turn' (Bondi et al., 2007, Kenway and Youdell, 2011) and traces and responds to the effects of governing by and through the emotions (Gagen, 2015). This includes a collection of work around discourses of 'aspirations' in education (Holloway et al, 2011) but also love (Kraftl, 2013a), joy (Hemming, 2007) and shame (Evans, 2006) as well as socio-emotional differences (Bowlby et al. 2014, Holt et al., 2013). In the narrative offered by Kenway and Youdell (2011) education is consistently positioned as a rational exercise of cognitive development where emotions do not feature formally. The separation of those who display behavioural, emotional and/or social difficulties, BESD, (or, after Holt et al.,

2013, differences) – which are often collapsed to an issue of emotionality – to other spaces assumes that these young people are aberrant and their state is inimical to that which is conducive for learning. Against this backdrop is the rise of neurologically-underpinned emotional education and the language of emotional literacy (Pykett, 2012; Gagen, 2015). Both Pykett and Gagen connect these shifts with not only the governing of emotions but the making governable of citizens through techniques of the self which promote emotional self-governance. These programmes are touted as of benefit to children's present life-worlds but of national benefit in pre-empting and preventing the development of complex problems which would, over time, require (more) expensive punitive, rehabilitary or socially supportive action. This is particularly visible in the recent work on aspiration by geographers where attempts to inculcate and govern emotions – here in terms of hope – are put in an overtly economic framing.

For some pupils this process of hoping, which Haplin (2003a, 2003b: n. p.) acknowledged “is a neglected concept in philosophical studies of education”, becomes called into question and increasingly so. Education policy seeks to enrol schools in challenging the ‘low aspirations’ of persons (both parents and pupils) in disadvantaged communities (Brown, 2011, 2013; Holloway and Pimlott-Wilson, 2011, 2012; St Clair et al., 2011). These mostly working class families are figured simultaneously as not only lacking aspiration (a low level, not a high amount) but as having the wrong kind of orientation to the wrong kind of future (not aiming higher with no movement up and away, as social immobility). Yet, critical research on aspirations (as above) has problematised the discourse and makes two major challenges. First, the empirical research refutes the idea that such groups have low aspirations, even accepting the terms as conceived and used by successive governments (Brown, 2011; Holloway and Pimlott-Wilson, 2011, 2012). Second, the theoretical work challenges the terms of the discourse itself which produces a hierarchy of futures which privilege certain (neo-liberalised) individualised futures which involve movement away from a local setting and study at certain preferred universities (Brown, 2011, 2013). The implication is that following the dislocation from the local and familiar/familial and in completion of higher education a highly skilled and more willingly mobile worker will result. For teachers who do not produce pupils as sufficiently capable and willing to engage with higher education and for pupils who cannot or do not wish to achieve this future is to

be constructed as a failure. Indeed, it is held as a 'waste' both for the pupil who has unrealised (labour) potential and the nation in whose benefit that potential is not realised (Katz, 2011). A wider (governmental) vision of what future(s) constitute human flourishing is in view here and education is called to play a part in producing the subjects who will both achieve and appreciate that future.

Despite John Dewey's (1897: 78) claim that, "Education, therefore, is a process of living and not a preparation for future living," it appears that most educational spaces seem to operate with a strong sense of time and telos; what is done today builds on what has been done yesterday and will prepare pupils for some (distant but approaching) future (Haplin, 2003a, 2003b; Kraftl, 2008). There is an anticipatory logic that study and work, play and socialisation conducted in the present may not bring about an obviously different present but a truly different future. Childhood as a time and the school as a place are marked out as times and spaces lived out in relation to progress (or lack of it) as suspended between the now and the not yet (Kraftl, 2008; Uprichard, 2008; Evans, 2008; Colls and Evans, 2008). Education is held up as something which will bridge that gap as the productive contradiction between the present and an imagined future that may be made present in various ways.

Co-operation in education spaces seems to depend on the pupil hoping in and living for something - be that placing hope in their own ability or the teachers' performance and planning and living for future wealth, health or happiness (Brown, 2011). Where pupils are 'successfully' imagining these beneficial futures and acting in the present in light of them in 'appropriate' ways, the orientation to that future or the nature of it is left unproblematised. Yet, the ways in which these 'not yet' futures are mobilised by pupils and teachers as an impetus in the present and in securing their joint participation in schooling are difficult to explore because when and where they are working they are mostly unspoken. That is, where there is not a deviation from a state of attentiveness and 'on-task' working behaviours the reasons for that compliance are not subject to questioning. It is when there is disruption that a pupil's attitude or aspiration is rendered as a problem requiring interrogation and intervention.

As the place of the school is often imbued with notions of transformation, progress, preparation and "childhood-hope" (Kraftl, 2008: 81) - not least as the motivational

driving force for teachers' 'mission' or for the vicarious hopes of parents - failure threatens the construction and enactment of these processes. In seeking to raise aspirations or encourage pupils to 'aim higher' teachers' act and intervene to try and remobilise particular affect circulations and certain orientations to particular futures. Whilst the work done in England reflects very specifically the articulation of political promise in terms of aspiration, research on hopes for future working lives that are cultivated and realised (or not) through schools has, to date, taken place almost exclusively outside of the UK (Holloway and Jöns, 2012: 484). Jeffrey et al., (2005a, 2005b) narrate the difficulties of young men in rural north India in translating school qualifications into paid work and Jones and Chant (2005) related experiences in The Gambia and Ghana. Here hope is related to 'failure' not simply as a discourse, or existential state but as an emotion. My work picks up these twin themes of working futures and emotions contributing to the enlargement of literature on work in England and the Global North. With respect to emotions I focus on the experience of learning itself, which reconceptualised by schools as progress, ties making progress with feeling good and remaining enrolled in the process of education.

An important contribution to draw out at this point comes from the geographies of childhood and youth about the ontological status of young people as beings and becomings. The figure of the Child has typically been characterised by her or his futurity (Uprichard, 2008; Evans, 2008). Whether in relation to the future of the nation (Chakrabarty, 2000: 224), or as a figure which guarantees the meaning of action as for posterity, with the Child as the imagined beneficiary, the absolute necessity of the ('appropriate') raising of children is held almost unquestioned (Edelman, 2004: 2ff). One of the ways in which that 'appropriate intervention' is currently expressed is through the separation of adult's and children's worlds (Archard 1993: 20, Finn and McEwan, 2015), with children's labour being the work of becoming, of becoming adult, this being ensured and maximised through compulsory schooling (Katz, 2011). These schools take on characteristics attributed to their children: a place of becoming in which the promise of nascent futures is incrementally realised in the present. Against this, childhood theorists (James and Prout, 1997) have deconstructed the deficit models of childhood discourses which figure children as "immature, irrational, incompetent, asocial and acultural" who through developmental stages must be

turned into “a mature, rational, competent, social and autonomous adult” (Heywood, 2001: 3). The effect of the ‘becoming’ narrative of childhood has tended to be the neglect or dismissal of young people’s present experiences and assumptions of adulthood as an achieved state free from dependence, change or error.

More recent work finds a synthesis and positions childhood as the productive tensions experienced by particular (but not unique) modes of being and becoming - as this is worked out in differing contexts - and so pays attention to young people’s present and future life-worlds (Uprichard, 2008; Worth, 2009) without viewing either as in deficit relative to the other. While such a distinction is analytically and politically useful it is difficult to sustain empirically. This is because one aspect of young people’s present life-world is the imagination and realisation of futures. Young people themselves, particularly in settings which emphasise learning identities, emphasise their sense of becoming as part of what it means to be a pupil. So an attentiveness to children’s futures as they are imagined *and* socio-materially made present in the school thus refuses any neat dichotomy which would pay attention to children’s presents over-against their futures.

Considering the place of emotion in education has been one means by which geographers have also engaged with ideas about futurity in relation to young people and their spaces of education. They suggest the contested nature both of what constitutes a good or appropriate future but also the necessity of emotional investment in such futures. These visions of the future may be, and are, rejected through choice, in place of other desired futures, or through coming to find oneself unable to achieve them. Further, where growing emotional self-governance is not in accordance with particular norms the emotions themselves become less a necessary means for attaining the right kind of future and more a threat to attaining such a future at all. Jeopardised is the present possibility of participation in spaces of education and therefore the likelihood of achieving the good or appropriate future. The productive and yet at times crushing (Berlant, 2011) relation between present and future life-worlds sits alongside the politicised means of representing young people as beings and becomings. As I have suggested such a distinction is difficult to sustain given the enfolding, looping relations between young people’s futures, as they

consider them, and their presents in which they work to realise and resist different potentialities.

Another means by which geographers have engaged with the resources of temporal interplay in schools is through attending to materialisations of different idea(l)s in the school. The spatial arrangement and assembly of the school becomes categorised with respect to time, with some formulations considered of the past and others as symbolic of and able to instantiate visions of the future. The introduction or proliferation of material objects into the school allows geographers to ask what roles such objects play in sustaining and reconfiguring learning relationships and the project of education. These objects, and their affordances, are taken to enable or hinder the realisation of particular futures and so attending to them provides a means of exploring futures as they are imagined and constituted.

Futurity and materiality

Though with antecedents in historical materialism, a 'new materialism(s)' or '(re)turn to materiality' (Anderson and Tolia-Kelly, 2004; Anderson and Wylie, 2009) has been evinced in geographies of education in two main ways. First, attention has been given to the (more-than-human, built) environment of the school and its spatial arrangement and second in considering bodies as they are known and acted upon in the school. Though I will discuss only the first here I return to the second in the discussion of pupils as data doubles in Chapter 5. In both cases diverse philosophical and theoretical inheritances have helped geographers pay attention to 'how matter matters', but in quite different ways.

Kraftl argues that in attending to the material construction of buildings, here specifically schools, and the multiplicity of socio-material practices that make them up as spaces, we are also paying attention to the construction of idea(l)s of childhood and instantiations of educational philosophies (2006a, 2006b). Instructive is the attention to the construction, the 'coming-together', of diverse materials. This assembly creates an educational community in which the action and tactility of rendering plaster walls and laying bricks makes the building itself (as process and product) part of the educational community – an occasion for mutual learning. This occurs not just through the first construction of the building but as an ongoing practice, through fixing doors

and cleaning toilets. This attention to the affordance of material assemblages in the construction of idea(l)s is worked through further in the Building Schools for the Future initiative (Kraftl, 2012; den Besten et al, 2013) and in homeschooling (Kraftl, 2013a). In schools-as-assemblage the making and transforming of the assembled elements is both productive and reflective of discourses that pull together idea(l)s of childhoods-futures-education. Mundane objects, their arrangement and practices associated with them, such as toilets and toilet cleaning, are invested with meaning, as charged with potential for the making of better childhoods and as more or less suitable for ‘the right kind of’ education which works ‘with (children’s) nature’. Such ‘details’ are not just about enabling the expression of childhood but could as likely concern the controlling of children’s unruly natures, such as in reconstructing corridors in the Building Schools for the Future (den Besten et al, 2013). Whilst some of the requests for redesign presupposed architectural and technological determinist views, the adults assume the performative and transformation potential *for teaching and learning* of material objects and their (re)arrangement.

Reh et al. (2011) demonstrate this in considering the construction of school ‘studio spaces’ designed to reflect and enable different kinds of pedagogic practice in a German primary school. One spatial arrangement, as in the case of discussions around Building Schools for the Future initiative, was constructed as traditional and as something to be moved beyond to enable new kinds of learning:

“The organisation of traditional learning institutions— blackboard, rows of chairs, passageways, corridors, staff rooms, lockable classrooms—was given up and replaced by a new spatial order” (Reh et al., 2011: 88)

This spatial arrangement is characterised as temporally of the past, which allows a different spatial arrangement to construct the teachers and pupils as appropriately modern and as conducive to the anticipated future. New spatial orders reflect and are constitutive of changing pedagogies and changing visions of the future. In both of these sets of studies significant resources were put into these building projects and the result was markedly different spatial arrangements. However, whilst this focus allows for striking ‘before’ and ‘after’ photos one of the problems is that it doesn’t account for the kinds of material change that might be more subtle and yet no less radical in

their effects. Though I do include such a photograph in this thesis, an image of a classroom before and after the proliferation of data may not appear to be that different and yet this does not mean that profound change has not occurred. Some objects which are made materially present and which make a difference may circulate without always being visible (like data). Geographers of education who seek to be attentive to the significance of materiality need to develop methodologies which pay attention to what objects are asked to do in financially austere settings, where change is incremental rather than abrupt, and where the objects are present but not always visible. Whether more or less visible, exploring the materiality of the school and its changes offers a means of coming to know the ideas or ideals of the future that such change is meant to prepare for or realise.

My work seeks to contribute to this area by attending to data production, circulation, analysis and display as a material practice that is now a crucial part of educational spaces but absent from the geographical literature. The data are purported to represent mental (but also physical and emotional) abilities and are externalised into forms which travel around and beyond the school. They are stored in databases and represent and are presented to young people, teachers, parents, edu-businesses and governments (Williamson, 2014a, 2014b). Data tie together the materiality of what a body is found capable of doing in a space (here, learning in all its diversity) and how spaces are designed and redesigned on the basis of that data. Pupil data, for example, was one criterion in the selection of which schools would benefit from the Building Schools for the Future described above and in which order they would be built. The spatial arrangement of material objects can therefore be taken as indicative of futurity and their reassembling can be productive of futurity.

Attending to emotions and materiality becomes a means of making knowledge about the conditions of education in schools today and the various relations to futurity. Evident in such conditions is the enfolding and looping back into the present of ideas and ideals of the future. These become the basis for the promise of change and the justification for interventions. The relations between education and futurity are numerous and complex (as I will explore in Chapter 4) but my way into exploring these relations is the contemporary proliferation of data. In the final section of this chapter I

begin the work of locating the research in work on data, as a material-discursive object, and to consider what has been written about its contribution to the spaces of the school.

Data and the school

Where the ubiquity of data, code and the intensified presence of digital technological processes are felt they have become increasingly important in the transformation of institutions and the reconfiguration of lived experience (Kitchin and Dodge, 2011; Kitchin, 2014a). Data-based living, a life enabled by and lived against measurement, algorithm and inferential statistics is experienced in a variety of spaces, from those of heightened alert to the more mundane. It is seen starkly in life at national borders - themselves distributed across a variety of spaces - (Amoore, 2006, 2009, 2011, 2013; Amoore and Hall, 2009) where some decision-making power is ceded not only to border guards but to the algorithms that tell them 'what to look for' to 'keep us safe' (Amoore, 2013: 1). It is life under drones or in operating and targeting them (Gregory, 2011). It is life in the pre-empting, preventing and governing of emergencies from the control room or in the exercise (Adey and Anderson, 2012; Anderson and Adey, 2012). Yet, it is also the quieter enablement of the 'smart city' (Graham and Marvin, 1999; Kitchin, 2014b), in the flows of traffic or the collection of waste. It is the 'personalised pricing' of online stationary (Valentino-Devries et al., 2012) or finding insurance or short-term loans denied or the terms varied according to IP address and 'click-stream' data, your recorded history of 'clicks' as you navigate websites (Dewille and van der Velden, 2013). It is the matching those seeking love through internet dating (Mackinnon, 2013; Slater, 2013) and the seduction of the shopper (Kitchin and Dodge, 2011: p181ff, p249ff). It is standing on weighing scales as part of the monitoring and 'managing' of Body-Mass Indexed bodies in state health interventions (Evans and Colls, 2009).

Whilst seeking to avoid the hubris of a myopic presentism, which sees 'Big Data' as changing everything, there are nevertheless important stories to be told about what data are doing in the world (Kitchin, 2014a). These stories mark, if not a departure, an intensification of certain processes and a diminution of others with social, cultural, economic and political effects. The school is not simply 'yet another' site of data-based

living, as appending it to the list above might suggest. It is a site of particular instantiation and innovation. Data are used in schools, according to one report (Kirkup et al., 2005:1), to facilitate:

- “more effective allocation of staff and resources
- performance management
- monitoring the effectiveness of initiatives and strategies
- evidence-based discussions with the Office for Standards in Education (OFSTED), local education authorities (LEAs), governors, etc
- challenging expectations of staff, pupils, parents, among others
- transitions and transfers, particularly transitions between key stages within schools
- identification of pupils’ achievements and setting of targets”

What data are asked to facilitate is comprehensive indeed. This is not to say that these practices did not take place ‘before data’, or that some form of data has not always been used in these activities. Indeed, concerns about school data have been a long-standing area of interest for school improvement/effectiveness educationalists, (for example Ehren and Swanborn, 2012) and data practices in education and for the state are not, in themselves, new (Lawn, 2013). However, it is to say that what may have previously been considered professional judgment is being recorded (often digitally), and at ever finer levels, and then as ‘data’, are being asked to act beyond, and even against, the professional judgment of those involved in their production. The epistemologies, systems and actors that allow for these judgments to be ‘recorded as facts’ are part of the story I tell here. Computers are used to run specialist and generic database and spreadsheet software, at first in school offices and then in classrooms and are networked to school-based servers. External connections allow for data to flow to and from the Department for Education and other data analysts actors like the Fischer Family Trust or the Centre for Evaluation and Monitoring. As well as being enabled materially and institutionally, the data-based school is also made possible by people with specific skills. So, into schools have come new or at least renamed actors, ‘Data Managers’ and teacher’s job descriptions have changed to include the entry and analysis of data.

Yet, these things we call 'data' are not something pre-given and stable across all sites and systems. Whilst Kitchin and Dodge (2011) suggest the use of the word 'capta' to convey that information is *taken* and constituted by the mode of its production rather than *given* as something which pre-exists the act of its recording (as the etymology of data implies), for simplicity I will follow the common use of the word 'data' in the school. Data-based living is the phrase I use then to denote the historical and spatially contingent experiences of lives enabled by and lived against the measurement, analysis and circulation of enregistrations which themselves become the basis of decisions. These data are stored in databases and also data become named as the ground for being and acting in the world. (I say 'named' rather than simply that it is the ground for this being and doing because the relationship between data and decision-making is complex.) However, it is not just that life is lived in relation to data but that data themselves have liveliness also, hence the phrase, 'the life of data'. This is to say that data have performative, agential qualities (Kitchin, 2014; Amoore, 2014) that I will specify and explore in more detail through the thesis. I should also note at this point that having set up this pairing – 'data-based living' and 'the life of data', I go on to complicate it in the next chapter.

At this point, however, I should emphasise that the kinds and quantities of data produced are specific to the purposes accorded to their spaces of production. So, in the school, in relation to a host of multi-scalar forces, actors seek to answer a question specific to this domain. How to assess - to know - pupils and their learning, teachers, 'the school' and the learning they affect? Data are the record of judgment but also render possible techniques of judgment, holding out the promise of intervention. They are bound up with a complex temporality relating a pupil's 'paused' pasts (such as previous grades) with shifting presents (target grades) and uncertain and normative futures (predicted grades and progress expectations respectively). However, a pupil's data and the future implied by them is not simply his or her own concern. Realising a particular future for (and with) pupils is being made, through data, a concern for teachers and their own futures, the future of a school and indeed, the nation.

In the last decade the place given to evidenced self-evaluation (Perryman, 2005) as part of a wider rise of an 'audit culture' (Bushnell, 2003; Hall and Noyes, 2009; Hall and

Millard, 1994; Maguire et al., 2011; Power, 2001) has led to changes in the co-production of data with and about pupils, parents, guardians or carers and staff about learning, teaching and levels of satisfaction. This 'data work' of collection/production, management, analysis, interpretation and of maintaining the flows of data has come to be seen as 'part of everyday life in modern "learning"/"knowing" organisations' (Kelly & Downey, 2011: 416). Indeed, with policy reflection on, and requiring, change towards schools being 'data rich' (Miliband, 2003) it has been said that such changes will bring improvement and foster 'intelligent accountability' (Miliband, 2004; Ozga, 2009). This is continuing with Department for Education policy to publish more data, particularly at school level (DfE, 2012).

This is the school as data centre where all claims about pupils must be evidenced for the sake of transparency and accountability and as part of a reflective cycle by teachers which promises to lead to better, more suitable teaching (Earl and Katz, 2006; Kelly and Downey, 2011). However, evidence is emerging that this sets the conditions for 'strategic' responses by teachers and cases of cheating (Ehren & Swanborn, 2012; Ball et al., 2012). While evidence of cheating allows only the claim that this affects a minority of schools, I will argue that there is systematic change in role for teachers in England from 'transmitter of information' to data producer and analyst which enrols the child as the same – as a social scientist of his/her own learning ability, achievements and life trajectory. This is understood by Facer (2012a) to be profoundly individualising move, and so:

"As currently used in education, data technologies could at best be seen as blind to relations of friendship and interdependence, at worst, they might be seen as hostile to notions of the Self as produced in relation with others." (2012a: 716)

While I find Facer's work illuminating, her claim seems to rest upon the assumption that the data themselves are not socially produced and productive of particular forms of sociality. An attention is needed not only to whether such data are individualised but also whether their production and effects are also individualising. Indeed, the claims made about what data are doing in schools are contested and often divergent.

Data are described in a number of different and sometimes contradictory ways by school teachers and academics. For example, data are held as both a tool for reflection and targeted improvement (Kelly et al., 2010: 38) and yet a distraction from reflection and holistic education (Kelly et al., 2010: 36). Data are said to be deprofessionalising (Kelly et al., 2010: 36) as in "are statisticians the only people who really understand how schools are performing?" (Lawn & Ozga, 2009: 2) but also as reprofessionalising (Kelly et al., 2010: 27ff) as new roles and new competencies are produced as well as the promise of 'objective evidence-based change'. There is also a range of language used to describe the role of data in decision making such as being/becoming data-driven (Kelly et al., 2010: 33) and which speaks of data as a means of governance at distance (Grek and Ozga, 2008: 1) where the production and use of data is a game to play (Kelly et al., 2010: 32). Data are also described in hyperbolic language: that there has been an explosion of data (Grek and Ozga, 2008: 1), or a flood of data (Kelly et al., 2010: 14) where society is becoming awash with data (Earl and Katz, n.d. p2) and drowning in information (Lawn and Ozga, 2009: 1). Finally, data are encountered as monstrous with a 'life of their own' (Lawn and Ozga, 2010).

As well as countervailing forces and perspectives on data the metaphors are evocative. The metaphor of water speaks to the fluidity, ubiquity and flow of data but also of force (of nature), power and feelings of being overwhelmed; explosion suggests rapid and potentially destructive expansion. Further the language of the monstrous raises questions about the agency of data and their position. Rather than acting as an impersonal and inert servant to a master's desire there is a risk both of 'unnatural' liveliness and concomitant dehumanisation but also again of something going out of its 'proper limits', of being out of control.

Given this, it is perhaps surprising that a survey of teachers showed remarkably positive views about their own use of data in schooling (Kelly et al., 2010; Kelly & Downey, 2011), of the need for evaluation and data's place in this (Croxford et al., 2009). Counterbalancing this, there were very negative views about the current reasons for collecting data, which were seen to be for surveillance with a view to punish or shame (Kelly et al., 2010; Kelly & Downey, 2011). For teachers, data functions as a disciplinary regime. The data are asked to perform two functions which

can be understood as being in tension: improvement-evaluation and accountability-monitoring (Kelly et al., 2010, Earl and Katz, 2006). Ignored in the literature, cited above, is the way data also function as a disciplinary regime in the classroom for pupils (Gallagher, 2004; Reay and Williams, 1999), as a style of interaction reproduced at many nested scales. Not least: pupil with pupil (peer marking or name calling), pupil with teacher (survey feedback given about staff), teacher with pupil (marking and grade giving), teacher with teacher (lesson observations), head teacher with teacher (performance management processes), local and national government with schools (local oversight and support; Ofsted, the independent schools inspectorate; league tables) and internationally through comparisons such as PISA (the OECD Programme for International Student Assessment), (see Figure 1 in Ball et al., 2012; Croxford et al. 2009, Grek & Ozga, 2008 and Lawn and Ozga, 2009).

This complex of networked and nested scales of interaction necessitates an attention both to systems and institutions and also to individuals and everyday happenings. Methodologies that pay attention to the macro-scale can occlude the slippages and re-workings of policy that take place in practice. And, in the literature above and that on school improvement and on data-based decision making (Schildkamp et al., 2013), the voices of young people, for whom all this data work is putatively enacted, are strikingly absent. Yet, to make sense of the place of young people in this data regime and to hear their words in a wider context I think it necessary to understand – as I have argued above – that the pupil, in particular, and the child, in general, is not an a-temporal figure. The particular relations to temporality that tend to be associated with an Enlightenment-inflected vision of childhood and also with the school are important to note here as they set a context for the question of how data are used in schools.

Despite the survey of work above, this research is significant because, as yet, there is very little empirical material which describes the ways that ‘data work’ appear in the classroom and life of the school and what difference data are making there. It has generally occurred ‘up-scale’ at the level of national and international policy (Ozga, 2009, Ozga et al. 2011) and teacher surveys (Kelly and Downey, 2011). Indeed, in 2014, Selwyn notes, “educational research has been generally slow to respond to the rising significance of data” (2014:4). Where this work is emerging, in the later stages of

writing, much draws from and speaks to (education) policy studies debates (Sellar, 2015; Williamson, 2014a, 2014b, 2015b, Ball, 2015). This is important in contributing to understandings of the relationships of affect and data in policy studies – such as the role of ‘shock’ in relation to the production and circulation of PISA (Programme for International Student Assessment) data produced through the testing regimes of the OECD and the implications for globalised educational governance (Sellar, 2014, 2015). The language of commensuration (Sellar, 2015) is also instructive suggesting the need to think through, in detail, how it is that diverse phenomena are made amenable to representation by a common metric and the transformations needed to affect this. Moreover, this work, with that of Williamson (2014a, 2014b, 2014c, 2015a, 2015b) is providing important insights in charting the growth of a range of state and non-state actors, data infrastructures and the complex and blurred relationships between them in the establishment of ‘centres of calculation’. Much of this work is sensitive to spatial issues and will be of interest to geographers.

However, where empirics are drawn on to sketch out such changes they are those of public record and the human actors in schools are not particularised, and their voices not heard – they are abstracted as generalised figures, at the same time as concerns are raised about their abstraction through learning data (Sellar, 2014). Williamson does write elsewhere with a greater focus on children, the quantified and data self where children are ‘reassembled as data doppelgängers’ which enable the making of education as ‘machine-readable’ (2014c, 2014d). This is supported by empirical examples but again in more generalised terms. I find Williamson and Sellar to be acute observers who offer analytical rich work which synthesise insights from outside of education to make sense of the changes going in education in late-modern capitalist societies. It is perhaps uncharitable to criticize them, given that such work may go outside of their remit and the scope of their work, but the absence of empirical material from schools raises questions about the validity of this emerging understanding. Whilst I believe it to be schematically sound, a gulf emerges between such programmatic understandings and the everyday ways in which such policies, trends and logics are worked out in practice with the misalignments, divergences, slippages and improvisations of people who ‘make do’. Such approaches, to the extent that they deal with the figure of the pupil rather than actual pupils, do not produce

accounts which can speak to whether there are differential effects of such practices along familiar social indices.

Therefore, Selwyn's (2014) call for more research of the nature and effects of data in education is welcome. However, such a call for empirical understanding (which he, with others, is working to provide – Selwyn et al., 2015) should prompt hesitation from a position which assumes the aim should be “to provide a necessary critique of digital data” because of “the need to recognise – and then act against – the ‘politics of data’ in education” (2014: 16). This appears to assume *a priori* that we already know what *the* politics of data are and their effects, which despite previous work, is manifestly lacking for Selwyn to make a call for such empirical work to be undertaken. Similarly Ball (2015: 299) may be right to sound an alarm concerning some of the effects of becoming “subject to numbers and numbered subjects” but to cast the effect as the “tyranny of numbers” is, I believe, a mistake. It may be a tyranny *by* numbers but unless he wishes to rid the world of maths and empirical science his phrasing overreaches and is not untypical of the vehemence of the fearful warnings concerning data in education. As I will argue, there is much greater complexity, and ambiguity, to the roles that data are playing in schools and some of the findings of this thesis suggest the need to revise some of the claims made about data in schools made so far. However, it is not, necessarily, that these prior claims are incorrect. Instead, there is a need to be aware of their partiality. For example, the possible differences between national contexts (Selwyn et al., 2015 write from Australia) and even between schools in the same area even where the same, or similar, structures of accountability are in place. This is the challenge of making general claims from particular sites of research that I take up in the next chapter. It short, despite important emerging work, I maintain that this research is still well placed to contribute to this growing field.

Conclusions

In this chapter I began by offering a synthesis of literature on what I have called the ‘awkward geographies of schooling’. In both writings on the geographies of education and also in the lives and geographies of childhood, youth and young people, schools are central but decentred. The school is but one place in the lives of children and in making up childhood. Similarly, the school is but one place in education – the spaces of

education and learning encompass all ages and stages of life and a variety of institutions and 'alternative' sites. I have no wish to diminish the necessity of these pluralisation strategies or the insights which have been used to reframe subdisciplinary understandings. However, I argued that the relative paucity of work about schools themselves, their ongoing importance to the lives of many young people, teachers and parents and the nature of the change seen in them in recent years make them as important a focus as ever. In this I outlined an understanding of the apparent tension between the inward and outward foci of the project which seeks to pay attention to the subjects of schools and to understand the school as a site through which to make sense of socio-spatial processes. I recognised the framing of this tension as instructive but also difficult to sustain because of the porosity of the school in which 'inside' and 'outside' are readily blurred.

The school is a space constituted through the assembly and arrangement of a set of material-discursive elements. Changes to relationships between pupil and teacher both are productive of and reflect change to the space of the school and the possibility of making not only a schooled subject who may be taught, but an educable subject who may learn. In this way I argued that the distinction between education and schooling and teaching and learning can be made sufficiently to draw on and extend the programmatic insights of Foucault and empirical engagement of Gallagher. The attention to pedagogy is not simply an educational concern as these are outworked with socio-material implications for the education spaces of the school. They also connect the space of the classroom with other sites and with other scales – from local education authorities to globalised policy spaces.

Drawing on the insights of geographies of childhood, youth and young people allows an attention to the temporal discourses which are so often taken to characterise young people. I argued that schools take on characteristics attributed to their children: a place of becoming in which the promise of nascent futures is incrementally realised in the present. This is one way in which education and futurity are resonantly co-constituted in schools. I discussed two ways in which geographers have engaged with the relations between education and futurity: through emotion and materiality, reflecting two 'turns' in recent geographical work. Of emotion, the imperative of hope

– figured as the aspiring subject – was considered and that the emotions become a site of contest, intervention and considered a means of governance. Of materiality, the spatial arrangement and assembly of resources become symbolic of futures and a means of realising them. Reading these (re)configurations allows the objects and their affordances to account for the role they play in instantiating ideas and ideals of the future.

This work allowed me to frame the question of what role (proliferating) data are playing in the process of education and the production of futures. I argued that the proliferation of data is not something unique to education but that exploring what this means for the school offers an account of data not as a promissory achievement of a city of the future but as the already-lived reality of pupils, teachers and parents. This would be to offer an account of the life of data and data-based living. I noted that claims about what data could or should do in schools are contested and often contradictory and need to be understood with respect to the data assemblages (Kitchin, 2014) from which they result and which they inform. Such assemblages appear to involve nested scalar hierarchies but in these I argued that only some of the actors have been the focus of research to date. The absence, even in recently emerging work, of ‘small data’ (Kitchin, 2014a: 188) studies and the voices of young people is particularly striking. Therefore, there is a pressing need to understand what data does in schools (the life of data), what this means for those involved in its production, circulation, analysis and use (data-based living) and how the two relate.

Chapter 3 | Methodology: researching the life of data and data-based living

If a school is like a ladder, with people arrayed up the rungs looking up and down from their respective positions – with, say, head teachers at the top and pupils towards the bottom – one might need another ladder to climb on, in order to see with someone something of their view of the world. If the world of the school is one of levels, of asymmetries, of hierarchy, then certain implications can be adduced for methods of making knowledge: what I need is a ladder or some such tool. If the school, however, is more like ginger root, or iris plants, then it is a web of interconnections but with no beginning, end or centre. There are relations but no finally organising agency, there is a unity of multiplicity, ‘fractional coherence’ (Law, 2002: 4-8) but no static role positions. To know this kind of object might require a different posture and perhaps with Latour I could adopt the way of the ant, “a blind, myopic, workaholic, trail-sniffing, and collective traveller” (2005a: 9). Whilst this does not, on the face of it, sound promising, if the injunction is to “follow the data” then an attentive researcher finds an (always) arbitrary beginning and follows the traces of such an assemblage cognisant of relationality, process, contingency and multiplicity (Law 1999: 9-10) and human and nonhuman agencies (Latour, 1999: 21). The school is the sum of such relations, the effect of their assembling, and is not bound to its physical location nor sensible by attending solely to that which is visible or present there.

But which sounds more like a school you know? The school as social hierarchy and role specification (even if there is some play involved) or the school as an ontological ‘flat’ assemblage? As I described in the previous chapter schools appear to be characterised by the interplay between nested scalar hierarchies. Yet, this story can be complicated by multiplying the sources of the disciplinary gaze. Not least because pupils watch pupils and pupils make judgments about teachers which are recorded. Nevertheless the main traffic of such work is to produce nested scalar hierarchies and so methods which are consistent with this ontology would seem to be appropriate. However, the focus of my research is not only relationships and more specifically processes of subjectification but is also to ask what work, if any, data are performing in and through schools. In this way I find myself caught between what Deleuze and Guattari (1988) might describe as an ‘arborescent’, a root-tree, conception of knowledge of the world

as hierarchical and often dualistic and a 'rhizomatic' conception of knowledge of the world as planar, connected, a 'democracy of things' (Latour, 2005). There are then accounts of scale, hierarchy and asymmetry in schooling relationships on the one hand and flat-ontology methodologies, inspired by Actor-Network Theory (see discussion by Bauer, 2015) which pay attention to object agency which seem particularly suitable for attending to data.

The question of methodology becomes how to make knowledge about the socio-spatial and the emotional-material life of data *and* data-based living? That is, how might I make sense of the relations between actors but more than that to also account for people's experiences of those relations? How to attend to the presence of data in the school but also at times to make the data (that is otherwise doing its work so effectively as to be taken-for-granted) visible and so to ask for people to reflect on it? Mixed methods with these dual aims in mind become about finding ways to 'follow the data and listen to the people' *and* 'follow the people and listen to the data'.

While I could be accused of having my layered ginger root cake and eating it, this is not to be inconsistent in my ontology but to recognise the apparent insufficiency of methods which derive from arborescent conceptions of the world when dealing with object agencies. And, whilst it could appear that the arborescent and rhizomatic ontologies are incompatible, theorists of one must nevertheless explain the phenomena that are intuited by and accounted for in the other. Latour sets out a rejoinder to those who are troubled by the incongruity between their apprehension of an asymmetric world and the call to methods which bespeak a flat ontology:

'What have you done', people could ask in exasperation, 'with power and domination?' But it is just because we wish to explain those asymmetries that we don't want to simply repeat them—and even less to transport them further unmodified. Once again, we don't want to confuse the cause and the effect, the explanandum with the explanans. This is why it's so important to maintain that power, like society, is the final result of a process and not a reservoir, a stock, or a capital that will automatically provide an explanation. Power and domination have to be produced, made up, composed. Asymmetries exist, yes, but where do they come from and what are they made out of?

Latour (2005: 63-64)

If the asymmetries of the school are composed, if the role specifications of teacher and pupil are assembled and are reassembled in relation to a proliferation of data, then such asymmetries themselves cannot be the ground of explanation for the social life we find in schools. The net needs to be cast wider to ask for many more actors to account for their part. I therefore deliberated on various methods which together would help attend to the life of data and people's experiences of data-based living and more fundamentally to the ultimate inseparability *and* incommensurability of these two modes of knowing. I say inseparability because the agency of data is not inconsequential to the form which data-based living takes (whilst not being deterministic) and the agencies of people have a role in shaping the forms which data take. I say incommensurable because the two – data-based living and the life of data – are not fully collapsible into each other; they retain their own centres, orbiting around the different objects of human experience and the experience of data in the world. In this chapter I will outline the approach I took in response to these problematics. I will begin with setting out the broad approach and the specific details of the research site, participants and the kind of data encountered before discussing the methods developed and the attendant issues of positionality and ethics.

Making claims (from one school)

While critiques may be offered about issues of comparability and wider applicability and caution about the “‘dead-end’ of idiography” (Castree, 2005: 544) I believe that a case study approach has much to offer, particularly given the kind of work that had already been carried out. The idiographic approach allows for the exploration of the idiosyncratic, contextual approaches that teachers and pupils find and develop in dealing with data. Further, it need not over-determine, in advance, what teachers and pupils count as data. The exploration of these lived experiences is as important, if not more so, to those persons involved as the practical and technical guides offered thus far which outline for what data could or should be used. A case study may in this way be illustrative of wider processes, caution against overly general theoretical claims which may assume a uniformity of practice that is not sustained by empirical investigation, open out and remind the reader of the multiplicity and complexity of the object of study and highlight factors or innovations that may not have been given due consideration (Mitchell, 1983; Castree, 2005; Flyvberg, 2005). I take these injunctions

as welcome in the context of previous forays and scene-setting work, which has tended to the generalisations of the programmatic and schematic rather than the surprising particularities of the thoughtful, improvised, messy and often more angular ways in which such programmes are lived and experienced. In some case studies it is the precisely the atypicality rather than ‘wider’ applicability of case that makes it worthy of attention. As I will go on to detail, in its relation to data and particularly to ‘progress’ the school in which I conducted the research is, by government measures, exceptional. It can therefore be understood as the historically and spatially contingent apotheosis of a particular set of outworked logics. It is helpful, both for its own sake as an interesting case but also to the extent that it is a vivid instantiation of a series of shifts which are evinced across schools. This is not to set up the kind of historicist narrative against which I have written elsewhere (Finn and McEwan, 2015) of ‘first here and then elsewhere’ by which this case becomes prototypical of a trajectory that will be followed by other schools. Rather schools follow different trajectories and this is merely one, though one which will have resonances with many others given the reach across schools of contemporary accountability regimes.

The validity of extrapolating from this school to others is not based on statistical inference founded on the representativeness of the sample as to the population but “upon the cogency of the theoretical reasoning” (Mitchell, 1983: 207). In other words, the reader is persuaded by the logical inferences (not statistical inferences) made, and that the connections made between a concatenation of different events and persons and things, are sound. Though this case is in some ways atypical, inferences can also be made where the school is engaged in nationally standardised practices. Whilst school cultures differ and particular practices vary, to the extent that schools comply with national guidelines such as making, analysing and submitting certain data, what is seen in this school has its applicability to all those schools where the same processes are required.

Whilst there is a lot to commend the current proposals for software-studies informed methodologies which attend the functioning of code, algorithm and data assemblages (Kitchin 2014a, 2014c; Selwyn, 2014 and after Williamson, 2014b) these are not the foci or approaches I took in my study. The differences between the methodology I

developed and those emerging can be traced through the different histories and concerns of evolving and solidifying disciplinary approaches. My aim was to contribute to the geographies of education, childhood and youth and to education literatures more widely rather than primarily to draw on and work to extend the software-studies literature and those on code and algorithm *per se*. To resolutely ‘follow the data’ would have taken me out of the school and may have necessitated designing the project as a multi-sited ethnography - to local education authorities and the servers which facilitate the National Pupil Database (Kitchin, 2014a). Alternatively I could have worked with coders and expert statistical analysts on the use and production of datasets (Kitchin, 2014a, 2014c). Still further, I could have traced the relations between public datasets and non-commercial agencies, think-tanks and private companies for whom the flows of data allows for the development of analysis, briefings, predictive profiling, base-line testing which is given, or sold, back to schools (Williamson, 2014a, 2014b, 2015b). Indeed, these are interesting and important concerns and approaches. However, it struck me that the literature offered very little insight or understanding of these effects in practice. To account for them with depth and detail, and in which particular people - including pupils - were not conspicuously absent, meant staying in place and attending to the traces and material instantiations of such data as it flowed through the school as they are reworked and transformed in the process. The school is not, as I argued in the literature review, a closed system – indeed, it is interpolated by the logics and flows of its multiple connections. Yet, rather than following the data, as if by this to map the assemblage and get to some holism, and which appears in multi-sited studies to lead to stories of diffusion and dispersal, staying in place allowed for an attention to the effects of concentration and the assemblage as it is known in one of its nodes. This was intended to allow for the production of knowledge about education, data and futures in a way which could contribute to the lacuna identified based on the approaches that had been taken thus far. For these reasons I wanted to be based in a school over the course of a year and adopt a variety of methods to make for the possibility of staging conversations which explore the interplay of knowledges from different actors and which have the potential to ensure some benefit to the participants. I will now go on to describe the research site and give an account as to how access was gained and the kinds of data encountered.

Research site

This research took place in Parkside Sports College, now Parkside Academy in Willington, a former pit village in County Durham about 7 miles from the City of Durham (see Figure 1) between October 2012 and November 2013.

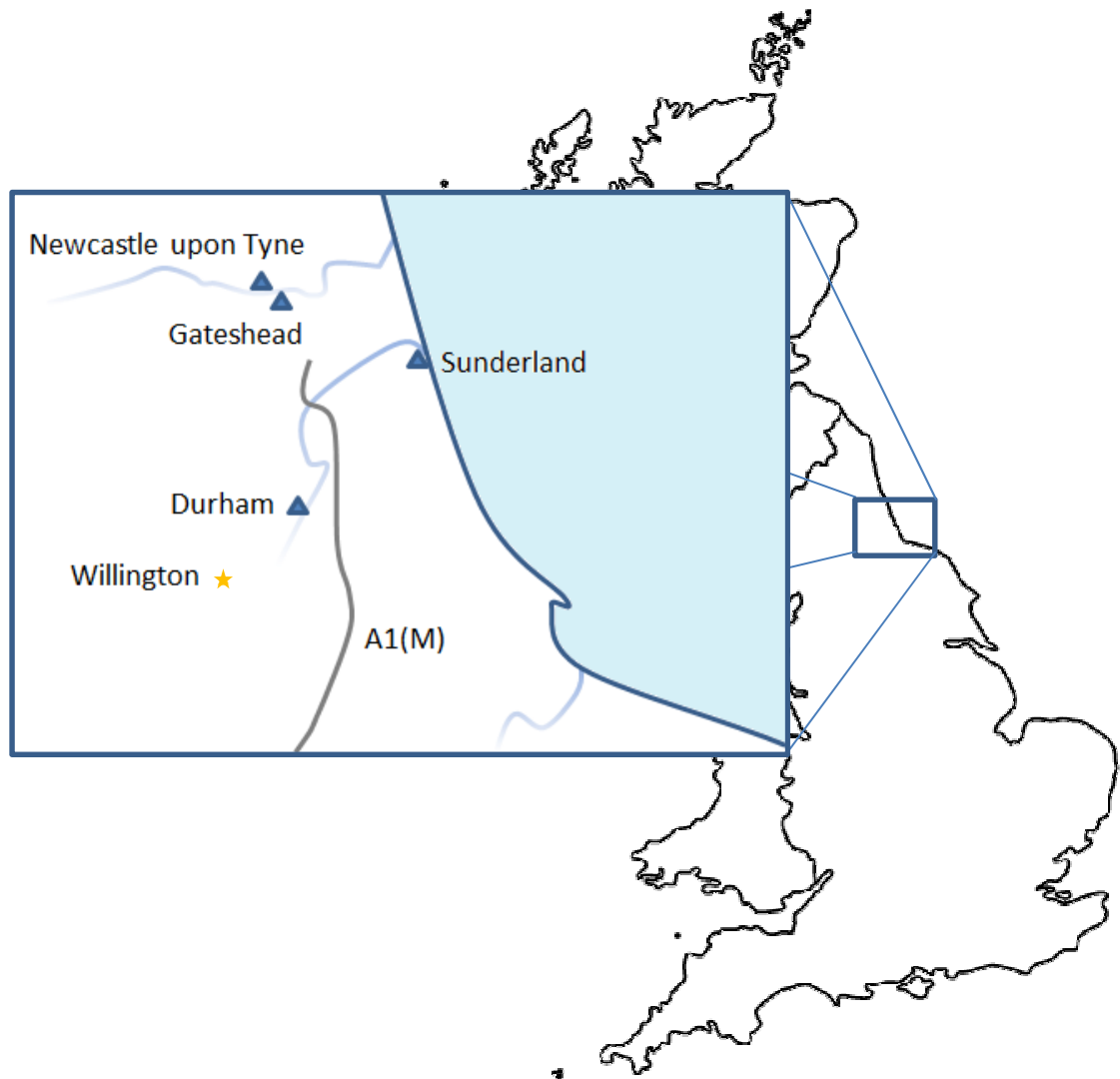


Figure 1: Map of school location, inset on map of the United Kingdom. Figure by author.

The school serves pupils aged 11-16 from an area categorised as being in the most deprived 5% of Lower layer Super Output Area (LSOA) in England (2010). With around 750 pupils the school is described by Ofsted (England's school inspection body) as smaller than average but with a higher proportion of pupils eligible for free school meals (a proxy for familial economic deprivation) and is a white British majority school. As shown below (Figure 2) the school was, for the year in which the study took place,

categorised as first out of all state schools in England for ‘adding value’ to pupil exam results. As I will go on to explain below this is related to the amount of progress pupils make. The school was given the highest rating ‘Outstanding’ in its last Ofsted report which was given in March 2011. As per the current policy, having gained this grading, the school is exempt from routine inspection. While the switch to academy status creates the school as a new legal entity previous school data are taken into account when deciding when the school should again be subject to inspection. Changes in pupil data and parental complaints are two of the ‘triggers’.



Figure 2: Image on the school’s website (accessed 11/07/2014)

Introducing data in the school

Various forms of data were regularly produced in the school. While some of these were for internal use almost all data had several uses and ‘audiences’ – whether that be (prospective) pupils and parents, teachers and senior leaders, or school governors, external quality assurance and accountability systems such as Ofsted or, before it was an academy, the local education authority. Figure 3 shows the cycle of reporting across the school in the academic year 2012-2013.

When speaking with staff and pupils I asked them what they understood data to include. It is important to note that this was not a new term or framing that I was bringing to the school; the staff were familiar with talking about data, had a named 'data manager' and received training on the use of data. Whilst I operated with a working definition of data as 'recorded judgments', staff gave consistent answers that data could consist of:

- **Learning data** – numbers (such as percentages, points, scores or national curriculum level) or letters (such as grades) which represent pupil achievement, progress, targets or expectations. See Figure 4 for more detail.
- **Effort and behaviour points** – these were given to pupils to reward exertion and sanction misdemeanours. Effort points could translate to rewards and in the system being introduced towards the end of the school year could be accumulated and exchanged for goods in high street stores, as money towards trips or given to a charity. Behaviour points could accumulate and would trigger a scaled system of reports.
- **Attendance** – this is recorded during each lesson.

For some teachers data also included written notes concerning pupils' circumstances and wellbeing and plans for support such as special educational needs reports. The box below provides an introduction to the kinds of learning data which were the main categories of data that were produced, analysed and circulated in the school.

The language of Key Stages is used with reference to some of the data and so it may be helpful to the reader to know that these typically refer to:

Key Stage 2 (KS2): 7-11 year olds, school years 3-6

Key Stage 3 (KS3): 11-14 year olds, school years 7-9

Key Stage 4 (KS4): 14-16 year olds, school years 10-11

At the point of the study full-time education (or effective education 'otherwise') was compulsory until the age of 16. The Education and Skills Act (2008) raised this to 18 coming into effect for 16-year-olds in 2013 and 17-year-olds in 2015.

Categories of Learning Data

Achievement data are based on final grades which in the case of this secondary school are mostly GCSE results (General Certificate of Secondary Education). GCSEs are typically taken between 14 and 16 years old (Years 10 - 11). In this school, pupils make GCSE choices in Year 8 (12 – 13 years old) and start their courses in Year 9. This is a year ahead of many schools. These results are used to create the measure '5 A*-C', a measure of the percentage of pupils to achieve 'good passes'. Sometimes this figure must also include an A* - C grade in English and Maths. These percentages are used in league tables and are often the most prominent measure (Goldstein et al., 1993).

Progress data are based on the difference in assessed grades between two stages of education. In this case between the end of primary school (at 10 and 11 years old, 'Year 6') where Key Stage 2 tests are taken, called National Curriculum assessments and colloquially known as SATs and – at the time - the end of compulsory education (Key Stage 4) where GCSE results are finalised (see above for a description of GCSEs). The GCSE grades are converted to a number so that levels of progress are a calculation subtracting the final result from that achieved before the pupil entered the secondary school.

The 'expected' level at Key Stage 2 is four and the number of levels of progress expected between Key Stage 2 and 4 is three. This is the equivalent of a C grade. English and Maths are calculated from Key Stage 2 results directly while other subjects use an average of these results as the starting point.

In addition the school used three other categories. There was occasionally confusion about these and the following descriptions (italicised and in quotation marks) are taken from staff emails and briefing documents.

On Course For (OCF) Level & Grades

"The grade you expect the pupil to achieve if they continue to progress at their current rate. This grade is arrived at using assessment data, classwork, homework and your professional opinion. If in Years 9 or 10, a pupil is on course for a grade higher than their target then it would be appropriate to raise the target. Remember targets should be stretching."

Email to staff, subject "data collection", January 2014

Student Targets

"What is a Student Target? – A Student Target Grade should be aspirational, be achievable with effort and it should be fully explained to the Student. The Target should

be for the end of Key Stage 3 and has been set 2 full levels above KS2. End of year targets for Year 7 is 2/3 of a level above KS2 and year 8 target is 1 & 1/3 level above KS2.

For some students, particularly the most academically able, two levels may not be enough so feel free to raise targets further.”

School’s ‘Teachers’ guide to Targets and Completing Data for Students at Key Stage 3’

Currently Working At (CWA) Level & Grades

“This is the KS3 [Key Stage 3] level the pupil is currently working at. This level should be based on assessment data and your professional opinion. From the CWA level a CWA GCSE grade will be automatically calculated (See table, right). Please err on the side of caution if you are in any doubt, especially as once pupils have met a level in theory they can’t go backwards. The data will be used Subject Leaders and SLT [School Leadership Team] to identify individuals and groups requiring intervention. Seek advice from your Subject Leader if you are new to this process. If your subject works in GCSE grades see the table below for the conversion back to levels.”

School’s ‘Teachers’ guide to Targets and Completing Data for Students at Key Stage 3’

CWA KS3 Level	CWA GCSE Grade
3c	G-
3b	G
3a	G+
4c	F-
4b	F
4a	F+
5c	E-
5b	E
5a	E+
6c	D-
6b	D
6a	D+
7c	C-
7b	C
7a	C+
8c	B-
8b	B
8a	B+

Figure 4: Description of Achievement and Progress data

I present these without much comment at this point, though I note that it is not surprising that the terminologies and schema are somewhat bewildering to the uninitiated; I will return to these different kinds of data and their description and use in subsequent chapters. A point to notice here, however, is that systems for grading and levelling pupils in different key stages have been subject to attempts to make them commensurate and prediction, tracking and the development of progress

measures are contingent on these equivalences. It is also instructive to observe that, in contrast to some of the literature presented in the previous chapter, language of 'predicted grades' is much less common (instead there are On Course For grades). The targets are informed by primary school learning data, CAT testing - Cognitive Abilities Tests - by the company GL assessments and the datasets of the Fischer Family Trust which incorporate social-economic status.

Whilst learning data were commonly entered into Microsoft Excel spreadsheet software all of the data above were regularly entered on SIMS, a proprietary School Information Management System, by all staff. Similarly, all staff were involved in the analysis of data and the school was much more like the 'data democracy' described by Kelley et al., (2010) than a 'data dictatorship', where access to and analysis of data were in the hands of the few. However, that access, analysis and consequent decision-making is, to some extent, in the hands of all teachers is not antithetical to the hierarchical working relationships implied by the excerpts above (with Subject Leaders and a Senior Leadership Team for example). The material I have presented here offers an introduction to the kinds of data encountered in the school and sets a foundation for the discussion and analysis which follows in the remaining chapters. I will make a brief comment about access to the school before turning to methodology I devised.

Access

Though not often written about, but of importance to the kinds of research that are conducted and the kinds of schools which are the subject of research, gaining access to schools can be challenging. Negotiating access was a lengthy process and in the wider context of accountability there are understandable fears about the possible cost to schools, in time and teacher and pupil capacity, and in some cases reputation. I had approached several schools about participation but the school sector in County Durham was experiencing significant change at the time with the advent of free schools, declining numbers of school-age children over several years and ongoing processes of schools converting to academy status. Two schools were closing and opening as one larger school, another contacted during my Masters was later to close. Access was gained through an existing relationship with the school. Research projects

led by Durham University had taken place there before and some staff were involved in research themselves as part of qualifications they were undertaking. I had been involved as a part-time paid researcher to assist researchers from Durham in a half-day session at the school as part of a project. Although I was not well known by staff of the school this previous work and the contacts made had helped facilitate initial meetings to investigate the possibility of this PhD research taking place there. Staff, both teachers and administrative support staff, were very helpful in particular the Deputy Head who was my main point of contact.

Methodology

It has been said that research design ‘deals with a logical problem and not a logistical problem’ (Yin, 1989: 29), in that a sound research design will not simply lean to the pragmatic or that which is achievable in practice but is designed so as to best answer the research question posed. This can sound overly rarefied when the reality can be one of messiness (Law, 2006; Askins and Pain, 2011). However, given the research questions outlined previously and the problematics outlined above the following methods were chosen to produce the knowledge in a way which was sympathetic to the participants and rigorous intellectually. These methods, of observation, interviews and a short participatory action research project, together sought to attend to the life of data and of people’s experience of data-based living, in part, thinking about the modes of feeling – the affective atmospheres – made, sustained and contested in relation to data. I will examine critically each in turn.

Observation

Since there is very little empirical material which describes the ways that ‘data work’ and ‘talk about data’ feature in the classroom and life of the school, I observed 11 days of lessons (55 hours) in October and November 2012 and took notes based on my observations and interactions with staff and pupils. I saw lessons in every year group. I sought to follow the material appearances of data in the classroom in speech and on walls, electronic whiteboards, computers and in classwork books and written tests. For example, I saw posters with pupils’ graded levels in the corridors and spreadsheets projected onto the white boards with red, amber and green ‘traffic lights’ to show

pupils the status of their work. I saw the registers of attendance taken and recorded on the computer and peer marking and I also attended Continuing Professional Development (CPD) training sessions for staff. I listened for explicit 'data-talk' and other speech that was implicitly about data. Kitchin (2014a: 190) suggests that such an approach, drawing on the ethnographic tradition (Crang and Cook, 2007), is particularly well suited to comprehending how such data assemblages and the lifeworld of communities are "constituted and continuously unfold". As a method such observation allows for an attention to nuanced and complex interactions and the kinds of slippages between practices as they are described by participants and as they are observed by a researcher. It also allows to researcher to draw things that may have become taken-for-granted to the attention of the persons with whom they are interacting to seek further understanding and explanation.

One of the ways I did this was to write and re-write 'prompt sheets' of things for which I was looking and listening (Figure 5). On the one hand much more is going on in classrooms than could be observed and noted by any one person – not least the myriad interactions between pupils, let alone the responses to the work set, with the teacher(s) and in the life of the mind – be it 'on task' or daydreaming. Conversely, classroom environments and the lessons that take place there can be, as pupils attest, very mundane, punctuated by moments of conflict or surprise. The 'prompt sheets' would help me pay attention to what could be fleeting moments or encounters that seemed particularly pertinent to my research questions. Long periods of watching, helping pupils with the work set or being roped in to disciplinary efforts by staff ('What do you think our visitor is thinking about your behaviour?') can turn to frantic writing of some moment, snatched phrase or shift in the classroom dynamics. At first there is much to write, simply because each school operates slightly differently; later there is less to write as one approaches 'saturation'. However, another shift is the movement from moments to interrogating absences, which in some cases means the everyday goings-on that do not immediately strike one as note-worthy. Some of these reflections appear in the chapters to come.

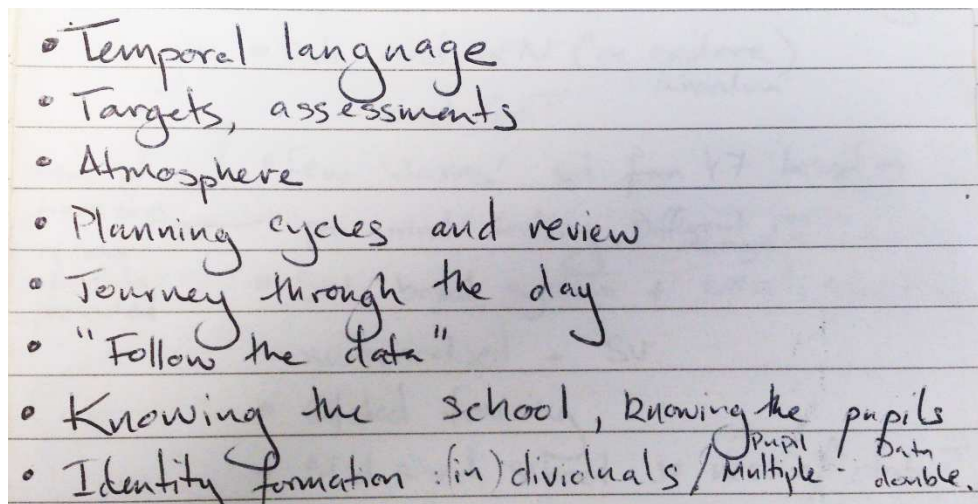


Figure 5: Example of a prompt sheet

To give one example of this, one of the things I sought to attend to were the atmosphere(s) of the lesson through paying attention to a range of interactions (see Figure 6). I watched pupils' bodily comportments, noting how people stood, sat, slumped, moved around and used their bodies in individual and group learning activities. I noted the signals of smiles or downcast eyes. I heard the sounds of the classroom from the huffings, raised voices and throwing down of school bags in frustration and anger to the 'bright' tenor of many voices animatedly talking and reflecting together or the 'deep' silence of stilled bodies in thought. Taken together, these contribute to a sense of collective feeling that I too was enrolled in and tried to rationalise in and through my body. Drawing on previous experience of work and research in schools, I made sense of these as atmospheres of progress in that they combined those interactions and comportments which are commonly associated in this raced, gendered, classed contexts as evidence of engagement and positive feeling with a sense of this resulting from feeling improvement as a movement through levels.

Maths

Couple slumped bags
down, head down, frustrated, despondent
or at least playing of the energy that
doing those thing give.

(not a maths teacher)

huffing

standing in silence behind chairs (for some time as t
video introduces lesson topic (proper get settled &
and sorted w/ equipment.

Bisecting an angle ABC. lots of questions

five minutes or so of silence and standing
still → calms them down - draining energy
then a more settled lesson.

Frustration and anger very quickly when
he ^[pupil] can't do something with the compasses.
But w/ teacher help then getting on increasing sense of mastery.
back again though to frustration.

Talking about paying the dole through
taxes - w/c pupils very negative about
people on the dole. ^{surprising} - not solidarity over
lack of jobs.

"I'm not paying for you to sit on the
couch and watch Jeremy Kyle"

Figure 6: Example of my notes

However, my own experience and interpretation of the modes of feeling engendered by and in relation to data may differ wildly from those of the pupils and teachers, due to my own positionality as neither teacher nor pupil but also in terms of my own biography. For this reason I also interviewed pupils and teachers. This method was something akin to the 'ladder' I wrote about at the beginning of this chapter, in terms of an attention to the way in which people articulate the meaning of their lifeworld and respond to the sense-making of others.

Interviews

I interviewed 19 Year 10 and Year 11 (14-16 year old) pupils in 13 interviews that ranged from thirty minutes to an hour. Having outlined the project in an assembly, pupils contacted me via the school email system. They could be interviewed individually or with a friend and in three of the interviews there were two or more young people present. CDs of the interviews were offered to the pupils and they chose their own pseudonyms. I sought to be sensitive to the ways in which data about learning can become closely connected to a sense of worth and wanted to ensure the start and end of the interview focused on things that were important to the pupils and contributed to a sense of positive self-regard. I adopted a relatively structured approach with additional questions to maintain a positive sense of flow and to clarify things I did not understand.

The interviews had four parts. The first involved getting to know the pupil, asking them about something they are proud of, someone who matters to them and something they would like to do in their life. Second, I asked a series of questions about temporality, thinking ahead through a school week to the things that they were and were not looking forward to, then over a longer period to what might come next after leaving the school and whether the school was or wasn't a help in getting to what might come next. Questions were carefully phrased and articulated so as to be open ended and not leading. The third part of the interview then turned to things I'd seen around the school about data and asking what they thought and felt about these. They spoke in ways which articulated some of their experiences of data and the individual and collective feelings associated with them that were not apparent in lessons. In some interviews, with the pupils' prior permission, they looked at a print-out of their school data - learning and attendance data - which some chose to show me, and talked about what they saw and felt. This was one way in which data were made present in the interviews but also opened out areas where data are made present to them elsewhere. The final part of the interview was to offer pictures of two gingerbread people (Figure 7) which pupil could draw or write on. If the pupil preferred they could narrate instead of draw or write, an option some took. One gingerbread person was to

represent what the school thinks is important about me; the other what I think is important about me. I said that these might be the all the same, all different or a mix of things. Following the approach of Leitch and Mitchell (2007) is using image-based methods to explore school cultures this section was intended to gain understanding about the overlap or tensions between the things valued by pupils and their perception of the values expressed by 'the school'. That not many pupils wanted to draw could be seen as a failure of this section yet the conversations around the diagrams elicited rich data with a strong dimension about how the pupils (make) sense (of) the atmospheres of the school and sometimes exploit and sometimes struggle to negotiate their interactions in different classes and with different teachers.

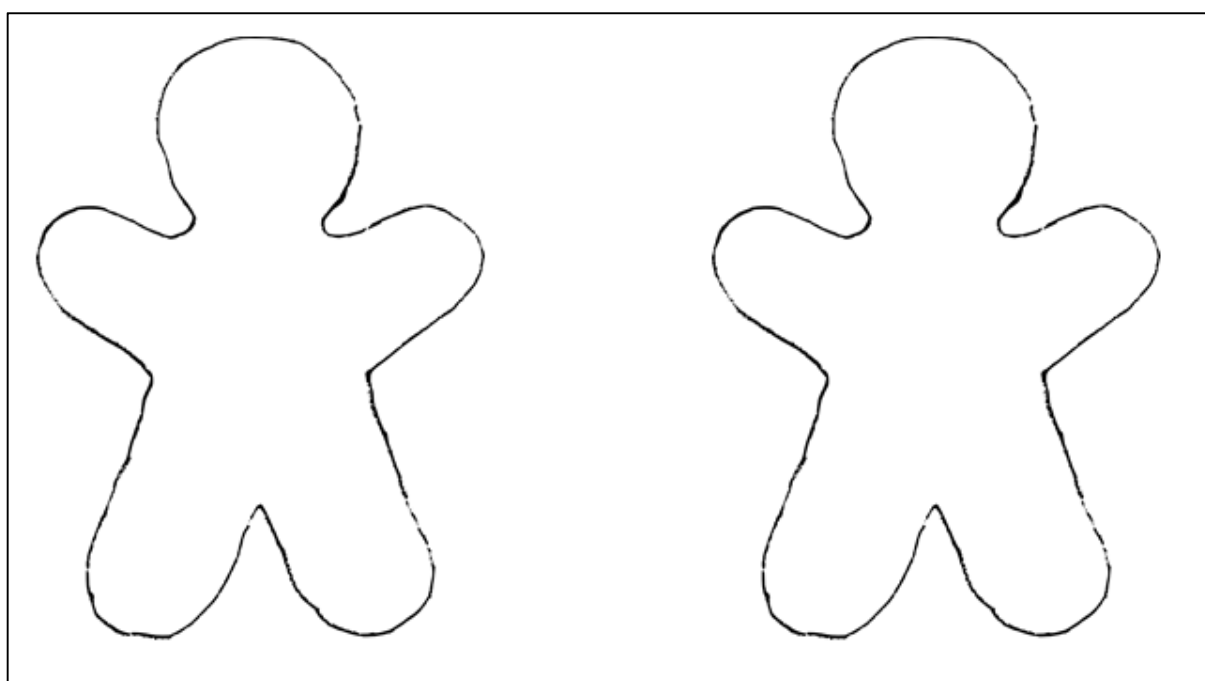


Figure 7: Gingerbread people sheets

Similarly interviewing teachers, we talked about how the school had changed over the time they had been here and about the use and limits of data in the classroom, paying attention to the roles they thought that data play in schools and their role in managing these. This was particularly pertinent to atmospheres in relation to their skills in classroom 'behaviour management' which can be understood as a form of socio-spatial affective orchestration. I interviewed 12 teachers at various career stages and subject areas for an hour to an hour and a half. I also attended Continuing Professional

Development (CPD) training sessions for staff. This contributes to and extends the research by Kelley and Downey (2011) based on a national survey of teachers and interviews.

When interviewing teachers it was not long (often within the first ten minutes) before they said, 'Can I show you?' and we would look at data on the screen in their office or classroom. This instinct to make data present and the desire to show not just tell me about data leads to deeper questions about the role of 'screen-informed' interviewing practices. The interviews move from 'face-to-face communication' to 'side-by-side communication' with our attention being occupied by the screen. In part the impulse to show rather than (just) tell seemed to come from the desire to illustrate the form and capabilities of the practices adopted – that as teachers they would teach me what they do (see interview transcript - Figure 8). What was presented on the screens was not simply artifactual, with data as the product accomplished by data work, but a narration and demonstration of data work as a practice: as entry, manipulation, interpretation, reworking, checking and sorting. The spreadsheets that I was shown were active documents, configured to 'hide' the names of pupils to anonymise the data and manipulated to better illustrate different points under discussion. This showed the 'play' of the spreadsheets, that they could be responsive to the questions the teachers asked of the data. This posed certain challenges to documenting the interviews. Although audio recordings were made and it seemed acceptable to make notes about what I was seeing and to repeat this or narrate notes on things seen on the screen the absence of this visual material is a limitation to the kind of analysis that could have been possible. Where this could have been recorded by video or screen capture additional methodological reflection and innovation is needed here to respond to the desire of interviewees to show and not only tell an interviewer about technology-enabled practices. I listened to the interviews several times and mind-mapped early themes which I used to selectively transcribe interviews. The use of broadly similar interview structures made it relatively straightforward to find particular sections.

I #00:00:45-0# We know nationally, and I can pull this data up for you, that not every level 5 will get a B grade, we know that. So, it's not an easy task to put a kid, and you are never the B. I don't do that lightly. We looked at all the data from Year 9 and 8 and this young man was struggling in the top sets, we've moved him into the foundation sets and he's thriving. He's still, he's C's not guaranteed and we want to guarantee his C because his C will get him into uni, will get him into college and ultimately is the gateway isn't it that C. So rather than have him on a higher D we rather have him on a foundation C. In my first year, this is quite honest this, in my first year of head of department in 2008, I (.) I made a huge error of judgement and I pushed a lot of kids who had B grade, sorry, yeah B grade - three levels of progress and I pushed them on to the higher paper knowing that if they were on the foundation the limit - they would never get it. And I got 18 D grades on the higher paper and I made a little thing to myself then I said, you cannot do that again. I don't want any Ds on higher, those kids had to resit and I felt personally responsible that I made that call that they took higher whereas if they'd taken foundation they may have got Cs and at the end of the day it's that balancing act of actually the data's the data and Ofsted are Ofsted but there's a child in this and what's best of the child isn't sometimes best for the data. So [child's name] is a classic example where I've made a call where he comes first, not my data. And it's tough and you can see I'm taking a hit there of 1 but I think it's manageable and I think he comes first. Can I just quickly show you this Matt?

M #00:02:43-7# Hmm

I #00:02:45-4# This is the RAISEonline data. So every school gets this twice a year. D'you know why they get it twice a year? Is that interesting?

M #00:02:52-7# Yeah

I #00:02:52-7# Right, we get unvalidated and then validated. Unvalidated doesn't have any resits in so you've got your November resits you've got appeals and sometimes schools can argue over who's on roll and who isn't on roll.

M #00:03:09-2# Right

I #00:03:09-9# So really you want for the validated to come out, the validated comes out in April as you can see there. So the unvalidated's around December and it gives you quick look-see and the head's obviously very interested

M #00:03:21-0# Yeah

I #00:03:21-5# And then the validated one's the one I really get my nose into. (.) And that's exactly what I was looking for. So that table there's the pivottable. Table 5.3.2 and every school table 5.3.2 is this table so if you look at any other school you'll get the same table. And what I'm looking at Matt, is this row here. We're looking at our weakest level 5s, so they just scrapped into level 5, s'called a 5c. And if we look at the national picture you can see that 66% are making the three levels of progress. So the argument there of course is one third of those weakest students are actually terminating on a C or a D. So when [the specific student being talked about] comes along I make that decision and I think well, look, it's happening, so I'm happy to take that hit. Does that make more sense?

Figure 8: Example interview transcript

Participatory Action Research

Adopting a Participatory Action Research (PAR) approach was important to me as a means of problematising the knowledge I was making with pupils and teachers through ethnography and interviews but also out of an ethical commitment to trying to ensure that the research was meaningful and beneficial to the participants. Further, the opportunities and challenges of this collaborative way of doing research are instructive of the conditions which shape the relationships between actors in the school. As “an umbrella term covering a variety of participatory approaches to action-orientated research ... [PAR] involves researchers and participants working together to examine a problematic situation or action to change it for the better” (Kindon et al., 2007: 1). Indeed, it was the promise of PAR as promoting meaningful collaboration with participants, minimising extractive approaches, improving validity, sharing skills and ensuring beneficial action results (Kesby et al., 2005) that was undeniably

“seductive” (Klocker, 2012: 149). Notwithstanding the exemplary work of Kindon (2012) questions have, however, been raised as to whether it is possible, given the institutional structures, timeframes and expectations of what constitutes doctoral work, to do a PhD in a way informed by the principles of PAR (McCormack, 2004; Moore, 2004). Klocker (2012) advances some ways forward and the approach that I took was to use my time in the school to lay the ground work for a collaborative project. The research questions I worked with were formed in ‘conversation’ with previous schools’ staff and pupils, my supervisors, fellow PhD students and the literature. The PAR project would run separately to rest of the project but could take up the themes I had been working on or not. In either case the direction taken by the group would speak back to and speak with the work I had been doing.

In the summer term of 2013 I worked with pupils from the ‘Pupil Voice’¹ group over eight weeks to develop participatory research projects that they chose and conducted. I presented to the pupils some of the emerging themes from interviews with the other young people and asked if they would like to explore these further. They chose instead to research two aspects of pupil-teacher relations: how teachers relate to pupils in different year groups differently and how pupils experience different lessons through the school day. Data and futures were not absent from these projects but they were not the centre of them – they chose to foreground the relationships between staff and pupils. The pupils presented their research to staff in the school and then to students and staff at Durham University’s Geography Department. While not directly related to data, I felt that this was part of my ethical commitment to pupils at the school – not least because it meant they got a ‘free trip’ out of it – this was no small thing - and something which had come up in the interviews as something for which they felt that there was relatively little opportunity. Although the subjects and findings of their research projects do not feature explicitly in the PhD it does not follow that they were insignificant. I found it highly instructive that their projects consciously re-contextualised issues of data as part of their concerns about pupil-teacher relations

¹ ‘Pupil Voice’ is often comprised of the representative function of a pupil council with elected members but may also involve undertaking projects with research and action components.

about care, respect and dignity and teachers' role of aiding learning and giving grades. This informs the framing of what follows, the attention to relationships between staff and pupils in the subsequent chapters and the concern around care in the conclusion. It should also caution those who would seek to use young people as voices to justify the removal of data in education. Though there were, at points, trenchant criticisms of the use of data we should understand that, in this school at least, there were other things that were more pressing in negotiating the relationships between staff and pupils in the school. Though not removed from issues around data and the future they refocus the issues and left me with the question and some initial pointers that I take up in the conclusion – what does it mean to care in the context of data?

While the methods described here are broadly conventional they intertwine the concerns of 'following the data and listening to the people' *and* 'following the people and listening to the data'. One might think that it is by ethnography that one follows the data and by interviewing one listens to people but the narrative I have provided above seeks to complicate such an impression. In following the data in the classroom the data 'jumps' from screens to books and appears in speech in the classroom – data work and data talk are inextricably linked. Conversely in the interviews listening to teachers and pupils talk was in part a process of following them as they followed the data. In this way any attempt at 'flat ontologies' quickly became recursive and the designed approach to make knowledge about scalar hierarchies quickly became 'ant-ish'.

Ethics

I have discussed above, with an attention to beneficence, some of the considerations in seeking to research ethically in the school. Offering advice, where it was sought, about university life was another way of seeking to put the resources I have benefited from at the disposal of others. I also presented back to the pupils and staff, on different occasions, themes from my analysis of the interviews. Although access was negotiated and institutional and Criminal Records Bureau checks completed, building a shared understanding of the nature and direction of the project is an ongoing work. However, the trust extended seemed to function in a different way. I would at points

come back to the member of staff who was acting as a 'gatekeeper' for the school. On one occasion when I was discussing the plans I was putting in place to ensure pupil anonymity and informed consent the response was an injunction not to worry, 'We trust you, Matt'. Once given it wasn't seen as necessary to continue to 'check in' such things because when access had been granted it did not appear to be conditional on the plans themselves but rather on the basis of evaluating my trustworthiness. Whilst there can be tensions negotiating different understandings of ethics (Klocker, 2012), it nevertheless places an ongoing responsibility to act ethically beyond that which is agreed initially. I adopted a principle of 'rolling informed consent' where consent is not a single moment of decision but many and my long term presence in the school allowed for the possibility of follow up conversations, clarifications and feeding back to pupils and staff.

One example of this is that I was concerned about the use of data in interviews. Pupils already had access to this data in a variety of forms, however I was concerned about the sensitivity of using such data in interviews to 'stage encounters' with data for the purposes of reflection. I was clear with the young people that they could withdraw at any time but re-emphasised that we did not have to do this part of the interview and that they could choose not to show me the print-outs from the school's data manager. All the pupils chose to see the data and some chose to show me and others not. I did not look at print outs before the interview and the young people could choose to take them away or leave them with me to dispose of (which I did in a confidential waste bin). I was concerned that the young people should have control of their data in these encounters and that I supported the school's legal responsibility to protect pupils' data. This was particularly sensitive in the context of group interviews (Longhurst, 2003) and in each group interview I asked the interviewees to agree to a 'ground-rule' that we would respect each other by not discussing what the other members had said outside of the interview.

Interviews ended with the opportunity for the pupils to ask me any questions and I asked them if there had been anything surprising about the interviews. I did this to try and ascertain a bit more about whether consent had been informed and to ensure that

even when the pupils had expressed strong negative views about the school the interviews ended in a way that seemed positive. The young people could choose their own pseudonyms and for both the pupils and teachers information and consent forms were used for each element of the research. Aware of the discussion by geographers about the tension between responsibilities to protect young people in the context of research and facilitate young people's right to be researched and take part in research (Abebe & Bessell, 2014; Bell, 2008; Skelton, 2008) I considered whether to seek parents' permission for young people to take part. As a Rights-respecting and promoting school there was a strong culture of young people understanding and exercising their rights and responsibilities. Indeed, statements from the UN Convention on the Rights of the Child were displayed around the school. In this context it seem acceptable to follow the views of some in the literature (Skelton, 2008) and the staff in the school that parental permission would not be necessary as young people could be counted competent to give consent. Neither was an adult chaperone deemed necessary. Extra caution was asked for in the context of one pupil but it became clear that this was because the member of staff was concerned that the pupil would 'waste my time'. Whilst some elements of the research became fixed early on others evolved or remained open. Decision-makers in the school were initially uncertain about whether they wanted the school to be anonymous or not ("it depends on what you have to say!") but following the feedback session to staff it was decided that the school could be named; though teachers remain unnamed. The context of the school then facilitated an approach to research with young people that was highly accordant with the understandings of children as competent social actors advanced in the social studies of childhood but more commonly denied by university ethics committees (Skelton, 2008). This does suggest that the perceived and indeed achieved competence of young people is contingent, though not determined by, their environment and this is something ethics committees will need to consider in their judgments.

In the final sections of this chapter I wish to provide some background to the study before going on to write about positionality. I do this because although the project was not 'participatory' in the sense of co-designing the research questions and methods

(Kesby et al., 2005), neither would it be appropriate to present myself as a detached, unresponsive and unaccountable theorist, disconnected from the people and situations through which the topic came to be something of interest and then presented as a source of possibility or calamity for learning.

Background

The changes with regard to data and education came to my attention through earlier research I had conducted in schools. My undergraduate dissertation explored gender and male primary school teachers and I sat in an office with the deputy head of one school as she showed me the data being produced and their analysis with respect to gender. I found myself surprised at the amount of information and the level of scrutiny it was given but also the impression of how these data travelled within and outside of the school in their use in accountability structures. I was left wondering whether this was a part of my own schooling of which I had been unaware. I was in touch with the secondary school that I had attended and received in the post a copy of all their available files on me. There was little that I had not seen before: termly report cards, end of year reports. There were no notes from parents or 'internal' documents, or records of behaviour or effort. All of the documents had been photocopied and though the information might have been in a database this was not the source: the information I had been sent had not be stored digitally but on paper. While particular to one school I was aware that in the schools I had visited for my undergraduate and Master's research that registers of attendance and the recording of information about learning and behaviour was done digitally and very rarely was information stored in paper-form. Though data was not the focus of my PhD proposal, through the Masters year and the first year of the PhD I became convinced that significant changes had occurred and were taking place and at pace in schools around data and further, that there was only an emerging literature about this phenomena. Though this summary necessary simplifies the process of project formation and design I narrate it to outline that the research did change and become increasingly focused on data both for its own sake and as means of thinking through the contemporary conditions of education. It is also to note that this was not the first work I had done in schools and that though not

raised directly by the pupils or teachers I did the other research with, when asked, it was clearly something that could be talked about at length but for the most part went assumed in the day-to-day life of the schools. I now turn to consider more fully positionality in the context of this research.

Positionality

Geographers have for some time now been attentive to issues of positionality (Rose, 1997; Kobayashi, 2003) and particularly the multiple positionalities of the researcher (Hopkins, 2007; Vanderbeck, 2005). This typically involves cultivating awareness about the ways in which gender identity and sexuality, ethnicity and class, (dis)ability and religious identities may, “influence and shape research encounters, processes and outcomes” (Hopkins, 2007: 387). This is as much an issue of ethics in research as it is about the production of warranted knowledge. In work with children and young people and in schools specifically, the structures which shape adult-child and teacher-pupil relationships are also talked about (Gallagher, 2004). This can involve the difficulty of negotiating relationships with school staff (who are also gatekeepers) and pupils, often at the same time. The particular ways by which men are constructed as risky in relation to young people (Horton, 2001) or how the height and build of researchers can be experienced as intimidating relative to children (Hill, 2005) can also present difficulties for some researchers.

Certain instances create mirrors (however opaque, Rose, 1997) to understanding these processes. Some that were verbalised by people in the school brought together a number of ‘identity categories’. In a registration session as part of the schools anti-bullying week a class was talking about bullying around issues of difference and prejudice. I mentioned, when invited, that there can be stereotypes about people from the North and South of England. Pupils agreed with the teacher that people can assume that you’re ‘thick’ if you speak with a Northern accent. They characterised my accent (I grew up in South-West London) as one you would hear on the TV news. (They asked me to say, ‘This is the BBC evening news’ and then the teacher did the same. The children voted mine as the one that sounded more ‘authoritative’.) In this my southern accent is heard as undifferentiatedly ‘posh’ and conflated with an educated and

authoritative (versus 'thick' and less authoritative) identity and with the voice of London-centric 'national' media to the exclusion of regional accents. In a participatory research session I asked the pupils if they thought I was posh. A reply came, 'Well your accent [is] but not the way you act', to which the others agreed. As with Rose (1997), it is not clear in what ways my actions had unsettled an otherwise coherent categorisation as posh or whether this was entirely a 'good thing', though the pupil seemed to mean it as a complement. Not only as someone with a classed identity as southern but also with an affiliation to Durham University provoked comment and sometimes requests for information. Even for very high attaining young people it became clear that some thought that admission to Durham University was inaccessible for them. Despite access events, Durham University was positioned as serving an elite which could not include them. I was asked at one point by a pupil in the course of a lesson observation, 'Are you *very* clever?'. Readers may recognise this as a loaded question where to answer yes or no would be to accept the premise of the question. A number of intersecting identities are brought together in these moments. Accent-class-media representation-ability-education mutually reinforce to produce an identity which is privileged and othered. Comments from staff which presumed access to present my work to government and possibly secure policy change also assumed 'elite' access and status. In this context observations and interviews with pupils, and with some teachers, were made more complex when statements were made which deemed designed to impress and secure my approval or support. Whilst it would be understandable to pupils or staff to agree to interviews as a means of gaining knowledge from me it felt much more complex when people seemed to seek validation personally or of their ideas or plans for the future. If I was being accorded a position of status I did not want to be discouraging yet nor did I want to accept the positioning of myself as an authority to be heeded or with the power to affirm. Conversely, there was sometimes subtle antagonism where staff or pupils asserted themselves over-against me. I attempted to present myself as researcher-as-learner, correspondingly understanding pupils and staff as experts of their lives and the school. However, my other identities appeared sometimes to challenge the efficacy of that approach.

Of the different axes of identity and difference that have been considered by geographers one area that has received scant attention (from searches of English language literature) in published geographical writing is that of prior education experience. There is one sentence in Hopkins (2007) and some little attention is given in internet-accessible unpublished geography theses (Israel, 2009; Harris, 2008; Deakin, 2012). Though educational identity intersects with class, race, gender, sexual, religious and (dis)abled identities it is also more than any of those identities. I would now like to outline a necessarily limited and partial educational biography. I do so to open up some issues for discussion particularly around moments of shock in the lesson observations. Though there is the risk of self-indulgence (Kobayashi, 2003) I think it is necessary for geographers of education to reflect on the assumptions they bring to their research based on their prior education experiences and I will try to outline the difference I think this makes.

I have experienced schooling at a local state primary school, a small faith-based private middle school in another London borough and a selective local boys' state grammar school (entry was through a series of locally administered tests known colloquially as the '11+'). Each of these has involved different kinds of social mixing and the social identity of each was relatively distinct. Each has played a part in the construction of my sense of academic ability and dis-ability (in terms of writing, short-term memory and physical co-ordination). In different ways the middle and secondary schools shaped a sense of my religious identity both within a faith community and then later as one of few with an articulated faith identity with respect to friends, peers and teachers who were variously secular, agnostic or atheistic. The middle school adopted the use of titles (Dr, Mrs/Miss/Ms, Mr etc.) and first names for teachers (e.g. Mr Matt). Through this and other differences between schools I understood that education and learning relationships more broadly could be and were 'done differently'. I later gained a place at Oxford University and had to leave following failing the first year. Apart from some of the difficulties at school this was the first major experience of 'education failure' I had experienced. The following years working at a City council as a human resources administrator, working pastorally with students through a church and then a kind of

internship which included theological education, teaching in a small private faith-based school and visits to schools with an 'educational consultant' including several in Kazakhstan. This allowed room to make sense of and question, through resources other than I had previously had access to, the education narratives and the constructions of success and failure and the 'good student' that had been central to my identity. It further contributed to a demythologizing of education where as both a teacher and student I understood that education is a spatially and historically contingent process. Though no neat 'origins' story can be offered where these experiences are in some sense determinative they have nevertheless shaped convictions that are present in the framing of this project. Though the narrative I have provided here is a contributory account of these experiences it is also the case that such experiences produce occlusions or 'blind spots'. Many of these may remain outside of my awareness but some become potentially intelligible through moments in research.

One of these occlusions is in understanding accounts of (my own) educational – and relatedly other forms of – privilege not only as a cultural resource but also as a form deficit in that such experiences can be based on (re)producing forms of social inequality and stratification. Being enrolled in a selective grammar school and then elite universities separates those who through schooling are produced as academically more or less able. This experience is not necessarily unique to these spaces as many schools set or stream pupils, which means for some, or even all, of a pupil's time in classrooms, they are educated separately. This practice is highly contentious and I do not comment on its educational merits or otherwise here. However, despite my experience of teaching pupils 'across the ability range', I was sometimes shocked by some of the experiences of 'lower ability' pupils. This was shock at the profundity of some pupil's 'inabilities', at the despondence, misery and anger of some pupils' experiences, at the way pupils were sometimes treated by staff and at what I considered to be a curriculum that was not 'more accessible' but so narrowed and so uninspiringly taught as to be impoverished. I must be clear that this was not unique or

necessarily even characteristic of the school in which the research was conducted but there were nevertheless these moments of shock.

What do I draw from this extended consideration of an aspect of positionality not often discussed? Partly, it is an argument for acknowledging and situating the experiences of shock which imply privilege. The need to work through these moments and consider the assumptions that are operating is part of what it means to engage reflectively and reflexively. It is also necessary to ensure that whilst there is empathy that this does not translate into pity as a patronising diminution of the personhood of those participating in research. It is also to argue that prior education experience is a crucial positioning which may “influence and shape research encounters, processes and outcomes” (Hopkins, 2007: 387) but has not been discussed. Though it may be most pertinent for geographies of education it may be of more import in connection with other axes of identity: not only what it means to be a classed-researcher, but what is assumed in those categories about relative educational positioning.

In this chapter I have outlined and discussed the approach I took in the research to engage with the key problematic of how to make sense of both the life of data and data-based living and indeed the tensions and interplay between the two. The particular methods did not map neatly on one side or other of the data-centric and people-centred foci. Whilst it might have been thought that observation follows the data and through interviews and participatory action research one can listen to people I have sought to comment on why the reality is less binary and more blurred. I have commented on some of the ethical issues raised by the research and reflected on the value of considering positionality with respect to education, something that is frequently omitted in the geographies of education.

Chapter 4 | Relations and practices of future-making in a school

Data not only “*have* both a temporality and spatiality” (Kitchin, 2014: 17, emphasis added) - as historically and geographically contingent productions - but functionally enable the making, and bundling together, of spaces and times. That the production of data allows for the creation of knowledge, which is held - in a realist and positivist frame - as objective, is well recognised (Graham and Shelton, 2013; Kitchin, 2014a, 2014b). However, what is overlooked in these statements is that such data purport to fix an accessible, measurable present and represent it to the reader (human or machine) as the past. The so-called ‘real-time’ city dashboards (such as CASA’s London City Dashboard, Kitchin, 2014b) are presenting a vast array of spaces and times as ‘the city, as-it-is-now’. Yet, this is ‘the city’ as it *was* sensed. Indeed, the delays between sensing, sending, receipt and visualisation vary between different sensors and according to the distance from the control centre even if the differences are of extraordinarily short duration.

In this way data are bundling a variety of spaces, allowing them to be visualised as one discernible place, and bundling a variety of times as *now*. (That said, these time delays can be accounted for when they matter, and in high-frequency trading they matter a great deal, see MacKenzie, 2014.) The data are productive of this sense of the present and of ‘the city’ as knowable over time and they enable the possibility of a comparative *longue durée*. The data that enables this sense of now may be compared with the data that have been recorded over time creating a historical record. Then, through prediction or pre-emption based on these data and extrapolations from them, the envelope of what is deemed knowable is extended into the future and made actionable. The making and bundling together of the futures and pasts and of different spaces into one place through data allows for the present to be understood as a time in which efficacious decisions are possible. Responsive decision-making here and now can make a difference across distance and to the not yet. That data do not merely present the city ‘as-it-is, now’ but make and bundle spaces and times can be seen through the case study of the school and in a way which raises critical questions for the

claims made of smart cities. One example of this comes from the beginning of the period of observation in the school:

Early in the year a staff meeting is called and it is noted by one of the leadership team that fewer behaviour points (for negative behaviours) have been awarded compared with the same time last year. Have the pupils changed? This is thought unlikely: 'Can staff make sure they're keeping a record?'. It's important for 'follow up' and for evidence in cases of [which might warrant] exclusion and it should not be seen as a bad mark for teachers to need to be using them.

Written from ethnographic notes

Behaviour deemed sufficiently disruptive by a staff member's judgment is recorded across classrooms, halls, playgrounds across a range of points during the school day to SIMS, the schools information management system. Times and spaces are bundled to create a behaviour profile of 'the school' at a given point in time and which allows trends to be calculated. It allows for interventions (following up) and for the preparation of evidence to achieve particular futures (exclusion) when it is not yet certain who, if anyone, will come to warrant such disciplinary action. Conditional, possible and probable futures kaleidoscope into and out of view.

Several points are instructive in this example, which outline certain arguments that will be expanded and extended throughout the remaining chapters. First, the making of data is not passive collection; it relies - thinking only about a few of the actors for now - on the behaviour of pupils, the judgment of teachers and the expectations of senior management. That teachers might have thought they would be viewed negatively for recording high levels of behaviour points suggests that teachers are not neutral objective observers: their professional identity is at stake. The making of data in the school is a social construction and negotiation and processes of standardisation are employed to ensure consistency of practice – such as this announcement in the staff meeting. Second, even when there is doubt, older data can quickly become naturalised – last year's data are taken as a trustworthy baseline, whereas this year's data are scrutinised as under-shooting. Third, data don't speak for themselves, they are

interpreted; the senior leaders have decided that the lower behaviour points total communicates something about the teachers as recorders rather than about the pupils' behaviour on the premise that pupils have not become better behaved. Assumptions like this are written into the production and interpretation of data – and of what data are not produced. Fourth, such judgments about data can lead to interventions that become focused on producing (enough) data about a phenomenon rather than changing the phenomenon itself because the future in mind requires a sufficient amount and kind of data as a form of evidence. As such while data purports to allow the senior staff to know and so intervene upon across a wide variety of spaces and times as 'the school as-it-is-now', quite how those data are understood and acted upon, in the context of other sources of knowledge and a variety of imperatives, is complex. This is data-based decision-making (Schildkamp et al., 2013) but the relationship of data to decision is not immediate. If it can be said to be 'data-driven' it is because the production of data becomes necessary to the possibility of achieving desired futures.

Such efforts, to make data which bundle times and spaces together and open up spaces for intervention, become meaningful where there is a particular future out of many possible futures that a person or group desires to effect. It is therefore in view of multiple futures that data enable some to be known, acted upon and realised. It is also in relation to these futures that particular data (or the lack of them) can become a problem: a threat to particular individual and collective endeavours. I will go on to discuss this in depth in future chapters. Yet, in order to understand the particular ways that a proliferation of data in schools has played into these efforts to relate times and spaces in order to minimise the risk of adverse futures and maximise the likelihood of desirable ones, it is necessary to account for the multiple ways in which education and futures are co-constituted in schools. This is because the production and use of data are not separate from the pedagogic and temporal relations and practices which are already evident in schools. Yet, nor is data coterminous with them. It therefore becomes necessary to ask what the futures are that data are positioned to enable or hinder. And what assumptions about the future are held alongside and against which

data comes to act? Offering a broader account of relations and practices of future-making allows for specificity in my argument about the roles that data are playing but also seeks to counter any implication that all futures are enabled by or dependent on data.

The chapter proceeds in three parts which draw on ethnographic notes from lesson observations and staff meetings. First, I argue that an unspoken assumption is that the possibility of futures in the school is dependent on the future of the school itself. Second, I argue that schools are sites of explicit futures, those in which particular, nameable visions are taught, imagined and actualised, and third, that schools are sites of implicit futures, those in which future-oriented temporalities and techniques are embedded in the practices of schooling. Throughout the focus is mainly but not exclusively on the ways in which futures are invoked or embedded in times and places of pupil-teacher interaction. This approach seeks to make knowledge about futures as they become present in teacher and pupil interactions; that is to say, as they become lived and sets a context for the chapters which follow.

Futures ‘in’ the school; the future of the school

In order to think about the futures ‘in’ the school, those of individuals and groups, and those taught, learnt, or avoided, it is necessary to examine the unspoken question which animates some of the actions I saw: does the school have a future? Even though the school had an outstanding rating from its last Ofsted inspection various existential threats were perceived.

A Durham County Council report (2006) had suggested that on the basis of a period of declining birth rates there would be a significant fall (5,500 fewer pupils) in secondary school pupil rolls until 2015, at which point it was expected they would stabilise. For the school studied, with a registered capacity of 900, this was expected to mean a change from 867 pupils in 2006 to 714 pupils in 2015, a projected fall of 153. By 2011, the roll was 747 with the school roll projected to rise from a low of 718 in 2013-14 (Durham County Council, 2011). Birth rates, in the intervening period, had gone on to increase meaning that the longer term future showed not just a stabilisation but a rise

in pupil numbers. However, in the meantime, school census figures showed that the roll was even lower than the predictions: 724 in October 2012 and 697 in October 2013 (Durham County Council, 2012, 2013). Where schools receive per pupil funding such changes from year to year and year after year present significant challenges to financial sustainability and to the ability to maintain staff numbers. Conversion to academy status was one route to try and maximise the access to available funds in a context increasingly shaped by austerity – though funds for schools were ring-fenced and the ‘pupil premium’ introduced. The pupil premium funds are intended to support the learning and opportunities of those currently receiving Free School Meals or who have been in the past six years, Looked After Children and Children with Parents in the Armed Forces. In 2013/2014 this applied to just under half of the school’s pupils and equated to the receipt of £287,100 (£900 per pupil). Nevertheless the falling roll presented significant challenges to staffing and the spectre of ‘rationalisation’ of schools across County Durham had been under discussion for some time (Durham County Council, 2006).

In response to this, and in the context of surplus school places, some staff talked about ‘being in a market’ where the school had to address the question, ‘Why choose Parkside?’. Not all pupils (and/or their parents) from the nearby primary schools did choose the school and rebranding and advertising outside of the school (Figure 9) and a programme of visits and a summer school for Year 5 pupils were some approaches implemented.



Figure 9: Bus Advertisement, seen in Durham City – summer 2014

Though the visits are of educational value and contribute to a more positive transition between primary and secondary school, these are a part of the rationale for the visits and one piece of communication with staff situates them in this broader frame:

“The purpose for the year 5 Skills days are to give year 5 students a taster of ‘exciting’ and ‘vibrant’ lessons at Parkside to encourage them make the right choice when they are choosing which school to move to after year 6... We want all students to have an experience at Parkside that cannot be replicated at their primary school or at any other secondary school they might visit!”

In one week in March 2012, 142 Year 5 pupils from local primary schools attended. In order to protect the school as a place in which pupils’ and teachers’ successful futures can be realised the future of the school needs to be assured. In a context of falling rolls, surplus places and school choice, this has meant acting to ensuring that pupils (and their parents) in their ‘core market’ and pupils from outside the immediate area pick the school. Whilst one could criticise an ethos of school competition rather than co-operation what has been presented above need not be understood cynically. Staff in interviews repeatedly praised the Head and their fellow colleagues as hard-working, caring and competent and felt that, given the stories they heard from other colleagues at other schools, this was something hard-won and special and so to be protected.

Falling pupil rolls and the need to be financially sustainable animate efforts to attract pupils to the school and data plays into these efforts in two ways. First, with the production of league tables, schools now ‘trade’ as much on their performance data as other factors such as ethos (Bragg and Manchester, 2011; Manchester and Bragg, 2013). This is evident in the publicity material produced for the school (Figure 2 and Figure 9) which focuses on progress data. Second, as data play a significant role in the triggering of Ofsted inspections and in the judgment of inspectors, the spectre of the school being re-graded following an inspection means that maintaining the data, and the learning gains that underpin them - in the face of changes to curriculum and assessment structures - become key to the possibility of the (successful) future of the school. As the head says:

"It would be a very brave or very stupid head teacher who didn't take note of what Ofsted were going to measure you by. Because, we will, you know, if we fail, we close. It's as simple as that and we let a lot of children down in the meantime doing that".

In the context of multiple futures - some desirable, others adverse - some futures become contingent on the production of (the right kind of) data and in others existing data are used to try and realise particular futures over others. The ongoing existence and success of the school becomes the assumed basis for individuals and groups realising their own futures within and through it. Of these futures I argue that two kinds can be identified: explicit futures, those in which particular, nameable visions are taught, imagined and actualised, and implicit futures, those in which future-oriented temporalities and techniques are embedded in the practices of schooling. Considering these provides a sense of the wide variety of ways in which education and futures become co-constituted in schools. The role that data are playing can then be assessed alongside, against or apart from these relations and practices of future-making.

Explicit futures: learning futures in the classroom

"The kids are good as well, they're not the feral little creatures they used to be, they have some ambition and they've got sixth form and they've got that idea of what they want to do in the future. Not all of them but there is that, they've got that sort of outlook where there is something out there and they're not content with just sitting here, doing their exams and then having babies and working in Greggs or whatever, you know: nothing wrong working in Greggs, you know."

Teacher, interview

Explicit futures are those which are named in lessons, whose presence shapes the meaning and purpose of present learning experiences and invite the pupil to engage with future worlds, selves and others. These visions of the future are not necessarily comprehensive (they may focus on a specific domain such as 'the environment' or 'reproduction') and they are not necessarily coherent. In what follows I will outline and discuss a range of these specific futures before returning to the relations between these futures and data.

Working and workless futures

"On average people who use languages in their jobs earn 8% more" reads one of several 'Did you know?' statements on a wall in a modern foreign languages classroom. These statements seek to persuade pupils of the benefits of language learning and many of them are future-oriented and most are economic in focus. Some give examples of what this has meant for employment in the region: "For example, Proctor and Gamble recently recruited 70 multilingual accountants for its international business centre in Newcastle-upon-Tyne". Working futures are explicitly invoked in the classroom in several forms. First, a significant rationale for engaging and succeeding in education is given as future monetary gain or the prospect of more satisfying work. Second, specific professions appear often in the context of 'options'. Sometimes this is on wall posters, such as the 'Real-life science' posters made by the Royal Air Force (RAF), and also evident in the trips run by (and to) local universities. Some recent trips included 'getting into nursing or medicine' or 'getting into law' and some had a gender focus, such as a 'girls' engineering day'. Textbooks also included, particularly for vocational qualifications, information about careers using that subject knowledge and training. For example, a psychology textbook included information on the work, training, qualifications and personal attributes of sports psychologists, criminal psychologists and forensic psychologists. In this sense, the textbooks were inculcating a sense of both what would need to be achieved in order to enter these professions as they currently exist but also the kind of person one would need to be in order to secure work in that profession. Both the grades needed and attributes to be demonstrated seek the formation of educable and employable subjectivities. Interestingly, given the boost in interest in forensic science and psychology through television programmes such as CSI, one textbook section noted, "Forensic psychology is a fairly new 'type' of psychology and there are fewer than 1000 chartered forensic psychologists in the UK". Though not explicit such a statement works against the 'CSI effect', the implication being a difference between the numbers of those interested in and qualified for certain jobs and the number of those jobs available in the world, the nation and the region. There was an awareness expressed by both teachers and pupils of it being hard to get jobs in the area but this was often expressed most clearly in the

necessity of education (see Jeff's comments in Chapter 5). This is where some of the language of 'options' and careers choices breaks down.

This was further illustrated in a lesson for the GCSE course in Leisure and Tourism where the focus on 'embedded careers', as part of lessons rather than in separate events, meant a focus on the skills, qualities and knowledge needed for work in the Leisure and Tourism industry. This can be understood as subject-formation both in the making of tourists as well as making of suitable tourist industry employees. An example discussed in the class was the work of the Ibiza Holiday Rep who should be confident and a good communicator, be on time, calm, good fun and flexible and in the words of one of the boys in the all-boys class, they should be 'always happy'. Such lessons introduce new information to pupils and ask them to consider in more depth issues of employment. They are also consistent with the project of 'raising aspirations' where a range of more or less skilled work is presented, some of which is extra-local. These possible working futures are folding back into the present in terms of seeking to motivate the pupils' effort but also to encourage the cultivation of the kinds of attributes or qualities that make for employable people. Whilst I agree that issues like integrity and reliability are important qualities, the tendency of these efforts is to encourage compliant identities. They are what Facer (2011) calls 'future-proofing' strategies. That is to say that certain qualities are prioritised over others and they are typically those associated with a neo-liberalisation of working relationships. Further, perhaps because of concerns about classed-judgments about different professions, pupils are not encouraged to think about those aspects of specific jobs that they deem to be positive or negative. Nor is there reflection on the relative willingness and ability of people to move for work and the implications this would have for those who value greater stability in community relations and proximity to family, including where this would limit economic productivity and earnings.

In various lessons, those designated 'low ability' found their ideas about the future were subject to more interrogation. One lesson involved internet-based research into work and university education. To the question, posed by the teacher, 'What do you want to do when you leave school?', some pupils responded, 'nowt', 'go on the dole',

'watch TV'. The teacher did not respond to these statements but in more than one lesson a pupil did respond with the same phrase, 'I'm not payin' for you', with some force. It was implied that some pupils' families are experiencing worklessness and welfare support and it was clear through these comments that though not uncommon in the area, this was highly stigmatised. Though a workless future was expressed as an imagined future I think care is needed in interpreting these statements. I understand them to be made in a context of resisting teachers' attempts to render their futures (and so their present time in the school and the work that would be asked of them in the lesson) as subject to action. That the teacher did not respond to these comments directly suggested to me that she understood the responses in this way. It was, however, striking that some pupils responded with strength of feeling and did not interpret the other pupils' comments as resistive but as a statement of intent. The statements took a state taxation system and reframed it as a matter of immediate personal relations – of me paying for you. In the context of the school this was a relatively minor discourse but represents something of the implications of those who are not part the major narrative about educational futures which lead to working futures and the freedom of choice about that future.

Against these narratives are those, particularly from low-achieving boys, about finding work through family contacts. One year 9 pupil who was interested in becoming a car mechanic was conducting an internet search and found mechanical engineering courses. He discovered, apparently for the first time, that payment is required for university degrees. "No way!", the idea of paying for education seemed like a terrible joke when he could train *and* be paid because "my brother would get me a job as a mechanic". This is the well-established 'learning versus earning' binary. It is important to stress that pupils didn't feel that finding work through family contacts was limiting but as 'canny', that is smart, because it could lead to a knowable and familiar paid, working future. This replicates work by Paul Willis (1981) in which it is those who pay to continue education without the promise of work, and a specific job, even if it were to offer better pay or conditions, who are seen as making the irrational choice for a speculative and likely indebted future. Visions of working futures are classed and this is

expressed in knowledge of available jobs and accounts of how, and the basis on which, those jobs are secured. Further, beliefs about short and long term prospects alongside moral discourses around 'delayed gratification' play into narratives of who has aspiration or is in need of it. More fundamental are debates about what constitutes the good life in terms of wealth, work, health and family and the level of mobility need to achieve or negotiate these goals.

Reproductive futures and sexual and relational presents

Explicit futures are articulated about a range of scales, from the individual body to the planetary. Some take the nation as their object. In a geography lesson, population statistics are charted through population pyramids and in a demographic transition model. They are descriptive of the present and rely on historical data but through them pupils are asked to observe, interpret and compare different national futures. Some countries' futures are 'youthful' and 'growing' and others' 'aging' and 'declining'. This language, when added to Eurocentric narratives about historical development (Finn & McEwan, 2015), assembles the ages and genders of citizens' bodies into a national body whose future (as youthful or aging) is considered as presenting challenges in different ways for the people of that nation. In the same way that the graphical representations are figured as nationally bounded the concomitant futures are considered in this framing. Absent from these narratives are events such as war, pandemic, migration, climate change, future health or education improvements that may mean that current population levels are not predictive of future population size and composition. The mobility of people, technologies or viruses are not represented and this has implications for the kinds of futures imagined and the developing imaginary geographies that might hinder or help in meeting these future challenges.

Reproductive futures are not only national but individual and in a biology lesson the teacher spoke about the biological changes associated with puberty and a scientific account of what takes place bodily in sex and pregnancy. These accounts were gendered with most of the information addressing reproductive futures as maternal futures. Pupils' questions (with some embarrassment but broadly open and frank) were asked only by girls. For example, 'What would happen if a man and a woman

came together but there wasn't an egg there, would she become pregnant?' Whereas in other classes futures might be cognitive, these were very much questions around implied bodily futures and the teacher phrased his answers in language of potentiality: 'may/can/might/has the potential'. Reproductive futures are held here not as inevitable but possible futures. In this context however relationships were not discussed or the implications of paternal reproductive futures. The question 'what would happen if', can be seen as a way of exploring inter-generationality, based on personal and scientific knowledge and the implications of present or futures choices and experiences. Maintaining the bodily potentiality in readiness for pro-social, economically-contributory citizenly futures meant that young people were subject to interventions designed to reduce teen-pregnancy, smoking and alcohol consumption. Interviews with pupils about 'what the school thinks is important about you' brought a range of answers, but consistent responses included "and your health, they're always on about that" (friend with Brian, female, Y10), with concerns raised about smoking, drinking, sex and healthy eating. The policing of school uniform, styling of hair and makeup was also a regularly brought up as a contradiction between the stated aims of the school helping each person to developing as an individual and the conformity required by the school policies. This was intensely felt as a contradiction between the present as ensuring conformity of bodily comportment and the goal of producing independent and individualised future selves.

Although reproductive futures were talked about in terms of potentiality, by contrast when relationships were discussed by pupils in lessons (though not as part of the curriculum) they were talked about in actualised and not anticipatory language. There was the surreptitious messaging of a girlfriend, talk of a pupil who is gay and has a boyfriend, a girl who is bisexual ("She's going with boys and girls but is more lesbian because she goes with more girls"). Sexual-relational identities are spoken of as already materially and cognitively realised, if fluid, and not in terms of potential or as future-oriented. I felt that some of the ways in which pupils spoke to me were performing these identities quite overtly to both test my reaction and to seek validation of mature identities which have more typically been understood as 'adult'

(i.e. where childhood is pre-sexual). It does however conform to the literature on childhood (or young adulthood) as a period of experimentation and role-play. Relationships were less a means of becoming (the future of those relationships was not in view) but were a sign of having become capable of sustaining a companionable relationship. The focus was on the present experience of enjoying that relationship (and the social status accrued by it) or navigating the difficulties that come with negotiating those relationships.

Environmental (planetary) futures

Childhood, considered conceptually, is often associated with hopefulness (Kraftl, 2008) as a period as yet untainted by cynicism, as a period of possibility where sensibilities are not yet fixed and as an expression that a future generation may progress to new heights of civilisation. However, I highlight the ways in which environmental futures were explored in the school to show that the futures imagined in schools are not always hopeful. Explicit futures are as likely to be framed as warnings as well as commendations; futures to avoid as much as futures to pursue. What unites the articulation of these futures is the possibilism that a window of intervention is open and action now may affect a different more positive future. Rarely are futures articulated as set, where action would be 'too late'. Instead, these are often left implicit, less as a future but more as 'the way things are'; as a statement of reality, of the present. Pupils, in several of the lessons observed, considered explicit environmental, or planetary, futures.

Pupils in one class had prepared individual presentations on 'the environment', 'pollution' or 'global warming'. Their presentations were based on material they had found from different websites and brought into the classroom a range of planetary futures. Some of ice melting and sea levels rising. Others of the effects climate change would have on 'developed or third-world' countries and in particular how people would be fed. One discussed the question, 'Can global warming end the world?' He suggested that global warming will not make the earth uninhabitable but went on to say that 'even if we die out, the earth will likely mend itself and produce new life'. This vision of the future, for some, might have questioned fundamentally the rationale for

schooling *in toto*, rendering the practice of education absurd. For others it suggests a clear belief in the self-healing and productive capacities of a post-human earth. However, the listening classmates responded little. Whilst these futures may be explicit the potential implications of them are often left unarticulated.

In contrast with other visions of the future laid out by staff, or pupils themselves, these presentations brought together a range of discontinuous and contentious visions of the future that would typically go beyond those written about in school textbooks. Despite some being apocalyptic in nature I suggest these should be seen as kinds of 'mundane futurity' in terms of the ways in which pupils responded (or rather did not respond). For the member of staff there was a greater sense of urgency and she perceived her role to be that of developing a sense of environmental citizenship. Her aim, in concert with other writings (Isin and Nielsen, 2008; Staeheli et al., 2013), sees citizenship not as a bestowal but as a project in which dispositions are to be formed and sensibilities cultivated in the present on the basis of a desired future. These citizenly affects and corresponding behaviours are meant to realise that desired future. Pupils are held as citizens-in-the-making and subjects of becoming not of being, occluding present citizenly acts or already existing political subjectivity.

Pupils had prepared, as part of the presentations, answers to the question 'What should we do and how?' The teacher asked, following one presentation, 'Do you all recycle?' to which one pupil replied 'No'. The pupil seemed to find the teacher's frustration at this and her remonstrance that 'It's about everybody doing a little bit', funny, to which the teacher replied, 'It won't be funny when you die'. This surprising and somewhat shocking encounter highlights the extent to which planetary futures were being conceived of individualistically. It was a question of recycling as a personal, individual response and left out of these narratives are the role of states, businesses or local communities. Despite the variety of futures discussed, in each case futures were folded back into the present with the same injunction to recycle. In this way futures were plural, uncertain and conflicting and yet also limited, known and gained coherence in the kind of response that was deemed appropriate. In the school, visions

of futures that may have alternative responses were flattened and not always folded back into the present with particularity.

More broadly the potential of explicit futures to disrupt are not always, or even often, experienced in the classroom. The scripts of defined appropriate responses are utilised by staff and pupils over against the particularity of explicit planetary futures. The occasion for disruption and dissonance was not the different visions of the future themselves but the disobliging, anti-social response of a pupil to the script of acceptable actions that are necessary to avoid a catastrophic future and preserve a viable human future.

I have outlined several domains about which explicit futures, as particular, nameable visions are taught, imagined and actualised at a variety of intermeshed scales – bodily, within the school, locally, nationally, internationally and planetary. Across these domains the focus consistently returns to the individual over collective identities – what does it mean for me to position and maintain my potential to actualise the proffered desirable futures? What action must I take now to avoid the undesirable futures? As I will explore in the next two chapters the senses of identity that data sustain are similarly individualising and yet there are important ways in which data also are used as a means for producing collective senses and as the basis for sociality and relations of care. Yet, in the production of data, as with the proffering of futures, the results are variegated and uneven. Whilst testing of learning and the recording of behaviour is broadly accepted the regular testing of pupils for drugs for example, or the recording of an individual's food waste or a pupil's recycling is not. Not all futures taught within the school occasion the need for the production of associated data in the school. Indeed, it is the achievement of the educable subject rather than broader understandings of contemporary citizenship that is assessed, though the two are connected. Michael Gove, the then education secretary, makes the connection in this way:

“it is only through learning – the acquisition of intellectual capital – that individuals have the power to shape their own lives. In a world which globalisation is flattening, in

which unskilled jobs are disappearing from our shores, in which education determines income and good qualifications are the best form of unemployment insurance, we have to ensure every child has a stock of intellectual capital which enables them to flourish.”
Michael Gove MP, 2011

It is this reading of the world, and the assumptions which underpin it, which acts as justification for the reforms outlined in the speech, including making the national pupil database public. The collection of data allows for the bundling together of spaces and times in the school. At another level, the same is true of bundling schools together in a way that allows politicians to know the educational ‘state of the nation’ and similarly to intervene. The requirement to produce data is itself an intervention which occasions the possibility for others. Though some futures in the school are not directly connected with the production of data, the production of data is associated with the achievement and elision of national and individual aspirations. As Gove (2011) goes on to say:

“Because the scandal which haunts my conscience is the plight of those students from the poorest backgrounds, in the poorest neighbourhoods, in our poorest-performing schools who need us to act if their right to a decent future is to be guaranteed.”

Yet, how - without adopting the practice of excluding pupils so that they must be educated elsewhere - does a school keep enrolled in the process of education those who would otherwise pose a risk to the school (data) and therefore the productivity and social and cultural flourishing of the nation? What of those who, for a variety of reasons, reject their right to the kind of guarantee offered by schooling? One of the means adopted by the school was a programme of classes called ‘Preparation for Adult Life’. This represents another kind of explicit future held in symbolic contrast to the other pathways even if their ‘destination’ was in fact similar.

Preparation for Adult Life (PAL) classes

Preparation for Adult Life classes are a pathway for those in Year 9-11 that is chosen by or recommended to those with a preference for a different style of learning, those designated ‘low ability’ or whose behaviour makes their inclusion in the formal curriculum difficult. The pupils take English and Maths classes as usual and their other

timetabled classes take place with one teacher who is known by her first name and in a special room, 'The Zone', which is set out with computers and desks but also an area of seats in the round. Pupils' taking this pathway may gain a range of qualifications including GCSEs (General Certificate of Secondary Education), BTECs (Business and Technology Education Council qualifications), ASDAN qualifications (Award Scheme Development and Accreditation Network, although this full title is rarely used) and Prince's Trust qualifications. The first two tend to be subject specific and the latter skills-based. Whilst combinations of these programmes of study are used throughout England the naming of this pathway as 'Preparation for Adult Life' (PAL) is specific to this school.

Education within 'The Zone' was defined by a series of symbolic distinctions to the main school (Kraft, 2013b, Holt et al., 2012). First, the teacher and teaching assistant are called by their first name. This seeks to flatten the hierarchy of relationships in the classroom and set a basis for respect that is not required by formal position. Second, the organisation of the room is different to other classrooms which both signals difference and allows for group interactions. So one class started with 'circle time', more commonly seen in primary school classes, in which people talked about their weekends. This communicated that the pupils are valued as people, as individuals, before they are valued as learners, as those who perform educationally. It was also clear that the teacher was using this to check (in a non-judgmental fashion) on the emotional state of each pupil and to pick up cues about home life and other potential issues (like excessive alcohol use). Third, all lessons are taken by the same person and in the same space providing a consistency of place and people that allows for feelings of safety and trust to build where life outside school may be characterised as chaotic and works against trusting relationships. Fourth, the content of lessons both in terms of knowledge and skills (for example, health and hygiene), is explicitly set in the context of home and work. Stories from the teacher's life were used to show the relevance of these knowledge and skills. Here again the language of potential was used, 'if you're working in/with food then'. Knowledge and skills were set in contexts the learning and practice of which would help the pupils to 'get on in life'.

Underlying the content and structure of education in PAL lessons is a highly relational account of knowledge, learning and people. Whilst time is given to building the relationship between pupils and staff in the wider school the number of teachers and pupil encounters and the movement of pupils around the school classrooms can mitigate against this. A curriculum of standard qualifications can be experienced as an impersonal and abstract set of knowledge and skills to be learnt. By contrast, the use of stories, context and practical experiences locates the PAL qualifications in relationship to things already known by pupils. Whilst some pupils will go on to college or apprenticeships the orientation to the future goes beyond the naming of the pathway. Though the pathway is titled as 'Preparation for Adult Life' the material and approaches used are as much focused on the improvement of life (skills) for present living. The pathway offers knowledge about managing money or organising food in a refrigerator safely or thinking about recycling, things that children in other homes may imbibe as 'taken-for-granted' knowledge. Typically this more 'vocational' knowledge has been ascribed less value in relation to academic knowledge, (see Wolf, 2011). However, the pupils in these classes appear to consider this knowledge as meaningful because it has a clearer connection with that which they deem to be of value. For example, the running of an enterprise scheme allowed them to plan and pay for an educational trip. The immediacy of the benefit accrued by this learning is in contrast with that of the other pathways where the benefit, apart from feelings of progress and institutional approval, are experienced over the long term. And, given an awareness of the local job market, and the pupils' family experiences such benefits are intangible and uncertain.

Preparation for Adult Life lessons might have been understood to figure the future as discontinuous from the present where there is a clear break between the life of childhood and adult life. Given that the school leadership would certainly assert that all the pathways are a preparation for adult life the question becomes preparation for what kind of adult life. PAL lessons are preparation for an adult life that emphasises continuity with conditions and experiences of the pupils' life now. The teachers attend to, as John Dewey puts it (1897: 78), "education, therefore, [as] a process of living and

not a preparation for future living". Whilst children in other classes will have to wait to attain adulthood post-education, the secrets of adult life (which schooling removes children from) are disclosed to pupils as a means of keeping them engaged in the process of schooling, producing the necessary data maintaining the possibility of access to approved futures.

Explicit futures then are those which are named and disclosed with specificity in the classroom. Whether they are to be avoided or sought, whether they are coherent or dissonant, and whether they fold back into the present or are left un-instrumentalised these explicit futures are numerous and various. Talking of futures and becoming subjects of them through the production of data is one of the means by which that which is outside the school – in space or time – becomes present in the everyday life of the school. These futures concern a range of scales, from the body to the region, from the national to the global. However, the effects of these futures are not experienced by undifferentiated bodies. These futures are classed, gendered, raced in specific ways and are mediated through personal and familial knowledges. Some pupils, in fact, have brothers or sisters at the school who tell them of their experiences. Their anticipation of the school, of teachers and classes, of pathways and GCSE choices is not empty but filled with personal knowledge of visits from primary school and mediated through knowledge from older peers, both friends and siblings. Younger siblings find teacher's perceptions of them shaped in relation to their older brothers or sisters. Reputations go ahead of pupils (both of behaviour and aptitudes) and they are implicated in a web of relations. Some pupils are taught by teachers who taught their parents. Maths teachers try to respond to parents who communicate to their children that they were never any good at maths and who communicate to their teachers that they don't know where their kids have got it from if they do well. In this way explicit futures are one way in which that which is outside becomes present in the school but also that which exceeds the school mediates, even shapes, the engagement with those explicit futures. Though data are not made in relation to all of these named futures the production of data becomes one means by which the actualisation of desired futures is to be made more likely. As a kind of looping effect the data becomes part of that future which is to

be achieved. Alongside these explicit futures are those I categorise as implicit futures, a different mode by which education and futures are co-constituted in schools. Whilst explicit futures are those in which particular, nameable visions are taught, imagined and actualised, implicit futures are those in which future-oriented temporalities and techniques are embedded in the practices of schooling.

Implicit futures: embedded temporalities in schooling

Implicit futures are those which are embedded in the everyday practices of schooling and seek to produce young people as educable subjects, maximally available not just to be taught but to learn. Some of the implicit futures focus on making education countable, as amenable to the production of data; others focus on making every moment count by bringing the moment of final judgment about learning repeatedly into the present. I will begin with the lesson objective (or intended learning objective), reflect on the use of 'teacher talk' about time in lessons, and think about the ways in which prediction, planning, practice and previewing are embedded in lessons.

Lesson Objectives / Intended Learning Objectives

The lesson objective (or ILO: Intended Learning Objective) is a statement, often written or projected on the board at the front of the classroom, which communicates the purpose of the lesson and what will have been achieved, in terms of the acquisition and application of knowledge or skills by the end of the lesson. The ILO is sometimes copied by pupils into workbooks. Though the objectives themselves could be understood as further examples of explicit futures, here I concentrate on the practice of setting objectives and their use in the classroom which I take to be an embedding of temporality in the practice of schooling.

Two examples include:

Example 1: Year 7, English

By the end of today's lesson I will be able to:

- Use a range of vocabulary when describing a person
- Use connectives to organise my writing

Example 2: Year 7, Science

- Give scientific evidence to debate for and against arguments (Level 4)
- Describe the difference between opinion and evidence relating to science (Level 5)
- Identify unbalanced information or arguments (Level 6)

Where learning is conceived as a more-or-less linear journey, the time in which it takes place is differentiated and broken into discrete periods of school years, terms, weeks and lessons. Learning is also broken into discrete tasks which whilst they come in a progression of learning material (a curriculum) may be more or less interchangeable. In the first example the ability to write coherently, in different styles, for different audiences and purposes has been broken down into the specific tasks named that will occur within the time frame of the lesson. It is put in a temporal form that specifies a future that will be achieved through the work of the lesson. The means by which it will be achieved are not included and the 'starting points' in terms of a pupil's prior knowledge and understanding are not stated. It is also written as an expression of a pupil's voice: it puts into the child's mouth a statement of intent and of confident expectation. As an expression of the future it is assertive and specific but other practices and associated language put this into doubt.

The second example breaks the learning journey into levels and is suggestive that learners may be on different trajectories. Whereas in English all pupils had the same objectives, in this science lesson there was the potential for different levels of achievement. Peer assessment was used, referring back to the ILOs or 'success criteria' to "see where you are", "where you're up to". In the science class the ILO was then not a declarative statement of a future that would be achieved but a range of possible

futures to aim for, and a means of assessing retrospectively whether that future had been realised.

The use of the phrase Intended Learning Objective also signals a different relation to the future to the Lesson Objective. One is given to imply a clear, specific and delimited future. The other suggests that while a teacher has intended particular objectives, other things may be learnt and perhaps too what was intended may not be actualised. This suggests a more 'open' conception of the future with the acknowledged possibility of rupture and surprise. This was seen in two ways. One was the 'DEAR' initiative to encourage reading for pleasure in the school as part of the whole school literacy plan. DEAR stands for 'Drop Everything And Read' and without the knowledge of the pupils and the majority of teachers, times are set when DEAR is announced over the classroom tannoy system. Pupils and teachers stop what they are doing and read for twenty minutes. This was to create a sense of excitement, uncertainty and disruption to the quotidian where extended reading becomes something associated with those affective senses, as something that young people get to do rather than have to do. This could be characterised as a simulated event, along the lines of fire drills, because they seek to take the eruptive nature of an event and make use of this (Anderson and Adey 2012; Adey and Anderson, 2012). Yet the event is known as possible, even likely. The same is true of Ofsted inspections that have the quality of surprise but 'known surprises'. 'Unknown surprises' appear to be much less common, if by this I mean things that could not have been known in advance. In one Religious Education lesson the teacher shared the learning objective but shortly after received a call about an emergency and had to leave the classroom. Before another teacher came to cover the lesson pupil's talked and later did other work. The future implied by the learning objective was not realised. Whilst the spectacular event is very uncommon, what could be called quiet surprises punctuate the everyday with frequency. Pupils in interviews (see Chapters 5 and 6) talk about the potential for data to surprise them, such that they have to reconsider what they can achieve and their related sense of identity. Teachers too are surprised by pupils. These examples have been given to illustrate that the conception of the futures expressed in Intended Learning Objectives is more open

and is 'ready for the unexpected'. There is a tension between these two conceptions of the future of learning as a predictable progression between present and future, and of learning as a movement that is not wholly predictable and which can exceed the known properties of the assembled elements that constitute the learning environment.

Time checking – the language of urgency

The practice of breaking time into periods as a means of managing the future intensifies the felt necessity of timely action to achieve distant futures through cultivating an awareness of time passing. In part this occurs through the bells which ring the changes of lessons and of break times, but most common was time checking. This was teachers using various references to time to sustain a sense of urgency.

For example:

- "Not long left: about eight minutes"
- "I'll give you five minutes – that'll be 12 o'clock although that clock is a bit slow"
- The use of a stopwatch on the board counting down, with the class counting out loud the last five seconds and a bell sounding
- "We've got ten minutes left"
- "There's three lessons left until half term now"
- "That took twenty minutes longer than it should have done"

This counting down takes the passing of time (which some have called *chronos*), which is made present in the ticking clocks at the front of each classroom, and transforms it into moments to be seized for action (which some have called *kairos*) (Smith, 1969). Though the *chronos/kairos* distinction may be difficult to sustain etymologically and conceptually it does help articulate the urgency that can be affected through the repeated invocation of time as it passes. This is the future as immanent and imminent. Not that these articulations are always successful in creating action, as they can communicate how long the pupil must hold out in their prevarication before the counting down will cease. What relation of education to futures is at work here? This

mode compresses the proximity and the feeling of distance to a known impending future. Given the inevitability of one future (that time passes: that the end of the lesson, and most significantly that exams will come) now is the time for action that will make a difference when the inevitable occurs. Thus the reckoning is fixed but the result of that reckoning is not yet known and exists in continuity with the present. More prosaically at the end of the lesson, or the end of the task, the reckoning is as likely to be whether the work apportioned for that period of time has been completed as to the level of quality achieved. The summation of completed tasks leads to improvement because those tasks are arranged to provide progression. Closely connected with this language of urgency is the language of consequences.

Threat – the language of consequences

Alongside the language of urgency comes the problem of when that injunction to act on the basis of passing time is not heeded. Discipline or ‘behaviour management’ functions on the basis of a relation to the future that implies natural causality.

- “If you keep doing that you’ll be staying like that forever”, “you’ll be staying at the end of the day”
- “Can make the lesson longer next week if you don’t show more focus now”
- “Need to do four squares or you’ll still be here at break to finish it”
- “If you want ‘biscuit Friday’ you need to keep working”

Here a different kind of future is invoked that brings together the ‘if...then’ of causality where one thing ‘naturally’ results in another. Here actions (or inactions) have consequences. Importantly there is nothing necessary about the consequence: a detention following incomplete work is not the same as a dropped hammer falling to the earth. Indeed, teachers’ speech naturalises the moment of discipline through the language of causality – if this, then you will. They omit the ‘I’ of discipline to depersonalise the interaction but it is clear that it is the teacher who will extend the lesson or withhold biscuits on Friday. Punishment is then often (biscuits aside, though note they come at the end of the week) meted out in time and through time. This is a future that was to be the child’s (in break, lunch or at the end of the day) that is taken

(back) by the teacher. As such futures are apportioned in advance and notionally possessed but may be taken. Built into these threats is nevertheless conditionality. These are contingent futures which are avoidable. Thus the speech-act which proclaims a judgment that never comes may be deemed effective because its purpose was not to announce the certainty of a coming reality but to – through a statement about the reality of what will come without change – bring about the change that renders the judgment unnecessary. Indeed the teacher hopes that the declaration of what will happen will not in fact need to be actualised.

Planning lessons, planning schools

Whilst teachers use the language of urgency and of consequences they are taught to try and plan lessons in such a way as to avoid the need for more involved forms of behaviour management. For example, the phrase, 'There's no such thing as bad behaviour, only bad lessons', signals both a shift away from responsabilising young people for inappropriate behaviour and also suggests the role that the teacher plays in setting the context in which boredom or frustration become causes of misdemeanours. Teachers' lesson planning and schemes of work are based on a combination of experience of past classes and on the basis of knowledge of the current class. This planning is, however, an anticipatory activity, with the teacher seeking to judge, in advance, how pupils and the class group as a whole may respond to certainty activities. Teachers in training are aware that they are learning these skills and may not yet possess the knowledge or skills to both anticipate and plan lessons but also to change them, in the moment, when things have not gone to plan. The teacher must, if they are to avoid confrontation, work out how they will respond to different children around issues like the use of chewing gum (forbidden), uniform (missing or worn less smartly or formally than required) and talking in class (of pupils over other pupils or when the teacher is talking or 'chatter' instead of work).

Though pupils' experience of the school may be conceived as linear, a progression through weeks, terms and increasing year groups, teachers' experience of the school is more calendrical and therefore more cyclical. The future is less the envelopment of the present by the new in a progressive form but repetition with variation. With the

exception of promotion and retirement the rhythm of the school year takes a broadly predictable shape. Sometimes the more linear and the more cyclical are combined with the language used of the spiral of learning where material is revisited in progressive years but in more depth on each occasion. This nevertheless assumes a coherence of study and curriculum that is not reflected in the variety of courses, qualifications, exam board providers and government interventions that shape with teachers the educational experiences of young people. As was seen in Figure 3 (the figure of the school reporting cycle), while a pupil moves along the row, through the columns and down a row at the end of each year, staff read all the rows in each termly column, and start again at the end of the year.

This narrative about pupil and teacher temporalities is further complicated as pupils experience the day as movement between different timetabled subject lessons with their peers whereas teacher specialisation means they are likely teaching the same subject but to different age groups throughout the day. Both modes require switching but one is a switching between subjects the other between cohorts. In that sense for pupils each lesson brings them one lesson closer to their exams and the time when they will leave the school. For teachers each lesson time jumps them between pupils who are comparatively 'nearer' or 'further' from the futures which the curricula build towards.

While the explicit futures tend to refer to and fold back into the present specific futures which extend beyond a pupil's time in the school, implicit futures are those which are embedded in the day to day running of the school and are focused on the process of education as gradual mastery of skills and acquisition of knowledge. The judgments about learning which will take place in final examinations and coursework are brought into each lesson to ensure that each time slot is countable and accountable. The threat of lost or wasted lessons and the need to achieve small gains and demonstrate progress period by period ensure that gains are made over the course of the programme of study. Data come to play a role in providing evidence of activity and whether that activity is efficacious within the defined parameters. Exam-style assessments (in class tests and mocks questions) and the meeting of criteria

defined in learning objectives are the means by which data are made, the future of terminal examinations and coursework brought into the present and trajectories established between the pupils' learning data to-date and their future performance. However, it is not just that these temporalities are embedded in the everyday life of the school but that means of engaging with the futurity (rather than named futures) are also learnt.

Techniques of futuring

The curricula as a whole are teleological in their design, with specified goals in mind, but also embed the learning of certain ways of dealing with futures. I will explore three: prediction, planning and practice. To reiterate, this is exploring implicit futures, those in which future-oriented temporalities and techniques are embedded in the practices of schooling. I call them implicit rather than explicit not because they are not talked about - they are - but because there isn't a specific, nameable vision of the future being invoked. The focus is on the act of visioning, not the vision itself and as such modes of relating to futurity are embedded in the practice of schooling. These means of envisioning are sometimes seen in relation to data but more importantly they form a pedagogy of futurity by which pupils learn to engage with futures which includes those forged in relation to data.

Prediction occurs most obviously in science lessons where pupils inducted into the scientific method learn to ask questions about the future, 'What do you think is going to happen and why?'. The world is understood as operating, for all intents and purposes, in relations of cause and effect. Hypotheses can be made and tested, and that testing can be repeated and described. Prediction was also seen in an English lesson based on the text, 'Of Mice and Men' where the ILO was 'to predict events from the text'. The story was stopped and the pupils had to consider what might happen next. Pupils had to 'infer' and 'deduce' and it was made clear this was not a 'wild guess' but the story had to be plausible; it had to be consistent with what was already known about the character and the world depicted. The act of inferring plausible futures in English, Maths or for the teacher in thinking of how a pupil might respond when asked to straighten their tie is an imaginative task. It is also conservative, in the

sense that eruptive, surprising futures could be dismissed or ruled out on the basis of the necessity of continuity. Deeper engagement with literature and with science shows however that the surprising does occur, and this can leave the reader feeling cheated (when a hitherto unknown twin is introduced in the final chapter of a whodunit) or lead to paradigm-shifting discoveries (for example non-Newtonian physics). Nevertheless, for the purposes of these lessons the pupils are learning to imagine a future that is not empty or infinitely malleable but one which allows for reconfigurations of that which already exists.

Planning is seen in a number of lessons, from essay planning to project planning in Art or Design Technology. In planning an essay the task is broken down into stages: noting down ideas, picking the best and putting them in order and structuring them by using PEE – making a *Point*, giving an *Example* or *Evidence* and then *Explaining* the point in more detail. In a writing exercise in a physics class the teacher emphasised the need to make a plan and not ‘just launch in’ but to think about the need for a start, a middle and an end and to make sure there is a flow through the writing without undue repetition. In Food Technology the planning of a new product necessitated thought about processes, systems, and putting tasks in order. In Art pupils had to consider how many lessons would be needed to finish a project, how they would use that time and how they would make sure that time would be used effectively. It might seem trite to labour this point, and the level of instruction given as to planning might seem over-prescriptive, but I include it to make the point that planning is a *learnt* activity. The ability to imagine a task in its entirety, to break in down in steps and to consider how long each part might take, is not trivial and is something that, for most pupils, requires detailed strategies, techniques and procedures that as they are internalised become taken-for-granted. The task of planning is made more difficult for pupils because the ability to plan for a variety of futures requires experiential knowledge of oneself, of others and the world which may be outside the pupil’s current experience.

One way of increasing those experiences is *practice*. Whilst this is seen most obviously for pupils in mock examinations (and increasingly for teachers in mock Ofsted inspections) most classroom activity could be described as practice. The repetition of

actions so as to render them familiar and even habitual is a mode of engaging with the future so that when necessary the practised action may be reproduced. This is very clear in Maths lessons where many examples of similar questions will be answered with slight variations, replicating the conditions of an examination where the exact form of a question is unknown. To practise with maths questions is in part then to learn to recognise a kind of question despite whatever disguises it might be wearing and so to allow for the correct procedure to be applied. (Mathematics education more broadly will tend to aim for understanding and not just procedural application but for most pupils recognition precedes deeper understanding.) However, the Maths teacher acknowledges that the value of practice could be undermined. He does not look at the content of practice papers (the mock examinations) because he doesn't want to tilt practice towards that which is due to come up in the practice examination. In this case, the teacher believes that knowledge of the future paper would lead to a selective form of practice which would not be indicative of likely performance in an examination in which the questions are not known in advance. Practising for a known future (an exam) which is at the same time limitedly unknown (unknown questions will be drawn from a known syllabus) thus provides a moment in the present to judge likely future performance. The practice is thus informative to the extent that the present conditions are similar to those of the future. For the teacher then he seeks to bring, as far as he is able, the conditions of the future into the present, to allow for practice as learning to take place. The implication here is that data produced in such practice tests can be more or less informative based on the extent to which the conditions under which the exam is taken match those under which it will be taken. The teacher could 'teach to the test' that will be taken and this could increase pupils' scores but these would be diminished as a source of 'realistic' knowledge in the process. The teacher is conscious that the data produced may more or less securely relate to the phenomena which they are supposed to measure.

Engagement with futures and the ability to predict, plan and acquire knowledge or skill through practice is something that is learnt and which is taught in the school – by a pedagogy of futurity. This is less about particular visions of the future; rather, it

concerns the means by which young people are taught to envision futures. Though some are more obviously related to data than others (such as prediction) the capacity to relate to futurity in these ways – whether consequential thinking or more imaginative leaps – becomes important in how young people think about themselves and their own lives in relation to the data produced about and for them. If, as I argued previously, that education is the productive working with the contradiction between the present and an imagined future, a pupil's capacity to imagine, to project and to prepare are crucial to their engagement. Pupils encounter predictions in relation to data and are asked to plan in relation to those data and to practice in order to improve those data. To be skilled in relation to futurity is something learnt and at the same time necessary for learning. Attention to these practices of relating to futurity in lessons mutually reinforces the practices as they are encountered in relation to data and vice versa.

I have outlined a variety of ways in which different conceptions of the future are embedded in the practice of schooling and to different effect. The explicit and implicit futures when considered together are often not coherent. The temporalities of the classroom are multivariate and a variety of futures may be made present in the classroom at the same time. Different actors, such as teachers and pupils, are also experiencing futures made present as part of different temporal rhythms. For example, a teacher may tell off a pupil or a class for the first time that day but this may be the fifth time the pupil or class has been told off that day. Behaviour management tools, like behaviour reports and recording behaviour points (given for misdemeanours) on the online management systems, are one way in which the recording of data which travels can inform teachers of a limited portion of a pupil's day – bridging the gap between different times and spaces.

Though there are a variety of both explicit futures invoked and implicit futures embedded in schools, some narratives of the future are more dominant than others. This is why schools are able to be *characterised* by the particular narratives about the future detailed in the literature review. In an abundance of futures, pupils (and their

teachers) are both learning about futures and learning how to relate to those futures in schools.

Conclusions

In this chapter I have provided an account of the multiple ways in which education and futures are co-constituted in schools. I argued that data becomes implicated in the bundling together of various times and spaces to produce a knowable place and a present in which interventions can occasion change. An unspoken assumption in some of the activities I observed is that the possibility of futures in the school is dependent on action which will secure the future of the school. In the context of multiple futures - some desirable, others adverse - some futures become contingent on the production of (the right kind of) data and in others existing data are used to try and realise particular futures over others. On the one hand some futures depend on data (such as maintaining an Ofsted rating) and here the production of data becomes the goal because the ability to generate it is taken as a basis for the presence of its referent, e.g. learning. On the other hand the production of data allows for interpretation, diagnosis and intervention to try and achieve particular futures which may not be expressed in terms of data (such as getting the grades, which are taken as the foundation for individual and/or societal flourishing). Nevertheless, the ongoing existence and 'success' of the school become the assumed basis for individuals and groups realising their own futures within and through it. And for the school to have a future necessitates the ability to produce, use, analyse, circulate and provide as evidence the data demanded of it.

I have suggested that there are multiple relations between education and futurity and one distinction that can be made is between explicit and implicit futures. Explicit futures are those in which particular, nameable visions are taught, imagined and actualised and tend to consider futures which find their realisation beyond the school. The articulation of these futures highlights the porosity of the school and the imbrication and interpolation of school and wider world. Such futures loop back into the classroom in an individualising fashion when there are calls to the pupil to act to receive, hasten, enable, reject, delay or avoid this named future. Though this effect of

individualisation will be taken up in the next chapters, data play into this effect but also offer the means for other modes of relating. Further, although data are not made in relation to all of these named futures the production of data becomes one means by which the actualisation of desired futures is to be made more likely.

Conversely, implicit futures, those in which future-oriented temporalities and techniques are embedded in the practices of schooling, find their fulfilment over much shorter durations and have more immediate ends in view, from the end of the lesson, to a unit of study and ultimately to the end of the course of study and typically final coursework submission or examinations. Data come to play a role in providing evidence of activity and whether or not that activity is efficacious within the defined parameters. Exam-style assessments (in-class tests and mocks questions) and the meeting of criteria defined in learning objectives are the means by which data are made, the future of terminal examinations and coursework are brought into the present and trajectories established between the pupils' learning data to-date and their future performance. The ability to make sense of, and act in response to, this data is primed through and resonates with the cultivation of skills for relating to futurity – in the form of prediction, planning and practice.

Education and futures are co-constituted in schools in multiple ways, some of which are more obviously related to and reliant on data than others. This chapter, contributing to understandings of the relations and practices of future-making in a school, set a wider frame by which specific claims can be made about the role data are playing in the process of education and the production of futures. As I have claimed, the production of data becomes part of the means of achieving particular futures and part of the practices of future-making. However, a detailed account of how this comes to be the case is the subject of the next chapter.

Chapter 5 | Forging futures in a data-based school: shifting grammars of agency

“He said, ‘Don’t care what I get, I’m goin’ to work for me dad’. That’s nice [for him] but what about *me*?” – a teacher tells colleagues about a pupil’s response to a target grade in a departmental staff meeting.

(From ethnographic notes taken whilst observing a staff meeting)

Data bundle together a variety of spaces and times to create a place that is knowable and governable in the present, comparable with recorded pasts and which enables the imagining and realising of futures. More than this, however, the processes of producing and then acting on data also results in the binding together of different people through their futures. In this chapter I argue that a school’s, teachers’ and pupils’ futures are bound together through data; their futures are co-colonised, sometimes with evident willingness on all parts. Pupil data are made important to current teachers’ professional identity, job security and career progression. Concurrently, a teacher’s ability to achieve progress for and with pupils becomes key to a pupil’s sense of possibility about realising normative visions of the successful schooled subject, one who is ready to achieve a particular social, economic and educational future. In making this argument, the chapter proceeds in four parts. First, I discuss what I call a ‘shifting grammar of agency’ in the school as indicative of the difficulty of attributing learning achievements to a single acting subject and what this means for school accountability. Second, I extend this to consider more specifically how the bundling and binding qualities of data play into these shifting accounts of agency. Third, and in relation to the first and second sections, I explore how diverging visions of the future, and the slippages between pupils’ self-perceptions, teachers’ judgments and ‘what the data says’ lead to contestation. The bundling and binding fail and the pursuit of some futures result in threat to the compact in which all actors enable the achievement of each other’s expected futures. Fourth, and finally, I argue these misalignments, divergences and slippages require thinking beyond the ‘data double’, in which there is an indexical link between a person and their data.

Shifting grammars of agency – forged futures

A banner (Figure 10) hangs on the front of the school building and next to pictures of happy young people in their school uniforms are the large words:

*We are
“Outstanding”*

An Ofsted ‘outstanding schools’ logo is off in the far corner as is the name and then logo of the school. ‘Outstanding’ is the highest category of rating that can be awarded by the inspectorate, followed by ‘good’, then ‘requires improvement’ and finally ‘inadequate’. The last two are deemed unacceptable but occasion differing consequences.



Figure 10: A banner hangs at the front of the school

We can follow the shifting voice from Ofsted’s voice of judgment, ‘You are an “outstanding” school’, past the declaration of the school’s staff, ‘We are “outstanding”’ and through to this image where the text is positioned by the pupils, ‘We are “outstanding”’. A located, historical judgment about the practice of teaching and learning in a school, and its governance, is repurposed and put in the mouths of pupils who make a statement about themselves: we are “outstanding”. The judgment

is transmuted and discursive slippages tie together, the 'we' of the school, the pupils and the teachers, ready to convince existing pupils of their exceptional selves, their parents as well as those who may consider coming to the school. This is a continuation of the strategies outlined in the previous chapter in which the promotion of the school acts doubly to give confidence to its existing pupils and parents and to promote the school to those who could join it. Such judgments – like those of Ofsted – are actively employed, looping back to the school, not simply as indicative of past performance but as descriptive of the present and performative in securing desired futures.

These slippages, which tie different actors together as 'we', are emblematic of shifting attributions of achievement and the challenges of accountability in education. As I outlined previously, an emphatic distinction between teaching and learning provides the conditions in which teachers are asked to be accountable not only for their teaching but also for producing learning. The Teachers' Standards document, for example, issued by the Coalition government's Department for Education states that a teacher must "be accountable for pupils' attainment, progress and outcomes" (Department of Education, 2013: 10). The meaning and force of this injunction hinges on what it means to 'be accountable for', and this will be considered more fully below, yet the significant point is that teachers are responsibilised for that which is ascribed as belonging to the pupil. The possessive apostrophe in *pupils'* is used to indicate that the attainment, progress and outcomes are 'of', or 'belonging to' the pupils. Yet, if a teacher is held accountable, to what extent could or should the pupils' achievement be attributed as 'of' or 'belonging to' the teacher or school as it is assembled?

The examination, whether oral or in writing, has long been a mode of making judgments about attainment (Lawn, 2013) but it was necessary to assume that what was being examined was the pupil: solitary, cut from their socio-economic background, separated from the human and non-human actors that had played a part in their education to this point. The result, in theory, was the pupil's, not their teacher's – the grades 'reveal' something about the pupil. It was necessary to assume these things if the goal was a meritocratic society in which the result was to act as any kind of marker of one's own merits and as an objective measure of 'innate ability'. Yet, if learning is,

as the Teaching Standards Document implies, the pupils' and something for which staff are accountable, how to separate the different contributions to judge the ability of each? In learning as a co-production it is difficult (despite the commendable work of statisticians such as Goldstein et al., 1993) to ask each actor involved to account for their own unique part. What would the child have achieved if they had this teacher instead of that one or been at a different school?

This is further complicated if that accountability is not only for a pupil's attainment but also for their progress. There is need for more data points than the results of an examination at the end of a course of study. At minimum, examination at the start of a course of study is also needed so an adjudication of change can be made. And, if account-giving could be asked of the school at any time (by Ofsted, parents or pupils themselves) before those terminal examinations, data must always be being produced for accountability-monitoring. Additionally, because of the promise of pre-emptive action, data will also be produced about each child for the purpose of intervention. As one teacher reflected:

"We can track quite early on how kids are doing and try and put intervention in much earlier, usually it was left until GCSEs where the intervention would kick in, where we try and do it much earlier now."

The condition of future judgment is brought repeatedly into the present so as to hold open the potential for action that will affect a different, better, result: in this case a better grade than would have been achieved otherwise. For both 'internal' and 'external' reasons then a proliferation of pupil learning data and associated calculative techniques result. School data offer a means of evidencing achievement over time and are used to make learning countable so an account can be given. Yet, the difficulty of attributing this achievement to teacher or pupil is evident in the shifting grammar of agency in the language that both pupils and staff use.

Jeff, in Year 10 says in an interview, in response to a question about staff care, that this involves preparing pupils for the future:

*"I think it's just that **they** can prepare **us** for the best so that **they** can get the best grades that **we** can and then **they** can, **we** can just decide what **we** want to do and that **we** can do it. So instead of wanting to go to college for not having the best grades so **you** cannot do that, **they** give us the best grades **we** can. Then **we** can basically choose what **we** want to do."* (Emphasis added)

The shifting pronouns here point to the problem of allocating agency and responsibility in this arrangement and I will consider this quotation in some detail. The shift between 'they' (the teachers/the school) and 'you', 'us' and 'we' (the pupils) happens several times and even within the same sub-clause. For example, consider the apparent strangeness of the construction of the phrase, "they give us the best grades we can". This could be dismissed as simply the employment of incorrect grammar on the part of the pupil. Yet I think it can be read as the perhaps faltering attempt to find language to express the complex relationship between the agency of pupils and teachers in co-producing learning. This is not to say we cannot be clear about the nature of this relationship and the roles undertaken. Jeff locates the achievement verbs with the teachers: 'they can prepare us', 'they can get', 'they give'. By contrast, the pupil is both the recipient and possessor of the grade but also a figure of maximised potential: 'they give us the best grades we can'. Yet, that potential is not the same for all pupils. There is some sense of capped possibility, some kind of natural limit for each pupil, and the teacher's job is to realise, to actualise 'the best possible world' for them in terms of grades. Jeff stops short twice of giving the pupils an active verb:

"they can get the best grades that we can"

"they give us the best grades we can"

One could imagine him adding 'get' to the end of both of those phrases but this would be to add a greater sense of agency than he is willing to attribute to himself and fellow pupils. At least in this section of the interview, it is the teachers who are decisively active in getting and giving the grades. However, pupils are not passive and this compact, this shifting grammar affords the pupil with certain abilities to act. It helps

hold open a future of possibility where the pupil's agency resurfaces as an individual who can choose, based on his own desires, what he want to do.

"we can just decide what we want to do and that we can do it"

"then we can basically choose what we want to do"

And the named future in view, that would otherwise be denied by the absence of grades-as-entry-ticket, is to go on to college for further education. At least in Jeff's account, this is an untroubled choice, without limit or barrier. The only barrier in view is not getting the grades. Engagement with teachers and with the process of education is a process of preparation which entails being subject to the agency of teachers in order that one's own agency can also be expressed. The possibilities of the future, particularly in continuing education, are held open by the active achievement of teachers within the limits of a pupil's potential. Admittedly, I am offering a very close reading of Jeff's language and could be accused of placing too much weight on his words. But this language isn't solely used by Jeff; it is used by teachers also.

I put to a teacher some of the comments made by pupils in interviews about what care looks like in the school in the context of grades and also noted that some pupils talked positively about being 'pushed' by staff to achieve. For her:

"It depends on what job role you're playing at the time as to what caring for the students and looking out for them actually means. It's the same with heads of department, theirs will be, the majority of the time, academic in getting them through the tests and getting them the data and looking after their students or caring for them is getting them the best that they can possibly get."

Again we see a mirrored form of language to Jeff, where care is expressed by 'getting them the best that they can possibly get'. There is the same tension of the teacher's agency and that of the pupils where here it has become the teacher's responsibility to 'get them the data'. This is cast by this teacher as a matter of securing a more socially just, if individualised, future, because as she goes on to say:

"they [the pupils] will realise that it's for their benefit, you know, and they do understand the reason they're doing it, so it's not that we're pushing them for the reputation of the school or for our grade. We're pushing them because they need their college places, and they need to do well and be a positive member of society".

The teacher uses the phrase 'our grade' rather than 'the pupil's grade'. This is the shift through data-based accountability to a situation in which it is teacher as much the pupil that is the one graded in the co-production of learning data. Further, the imperative of going to college and doing well sits alongside, and is linked to, what it means to be a good citizen. These are not simply desirable futures but necessary ones. The denial of other motivations (the reputational future of the school or teacher) is problematic as it followed an earlier remark to the contrary:

It's about getting the best for the students but also teachers are monitored in terms of what they get out of their students, you know. We've got government targets that we've got to meet and we've got percentages and we're in competition with other schools so it is always a push. For me it's about the students and getting them what they deserve and what they are capable of.

In the context of a competitive education system a teacher's professional identity is enrolled in securing the data for the sake of the pupil, the school and the teacher's own future. These personal and corporate motivations are held in tension with the professional and personal identities of teachers as child-centred where the child should, in theory, come first. The teacher above, along with others, would outline these other motivations and demands but return to the child as a rhetorical demonstration that the young people are their highest commitment (*'it's about the students'*).

A further tension is spoken between grades as the result of what are 'got out' of a teacher's pupils and something got for them. In the first, the data are figured as something residing within the pupils that must be extracted; in the second, the data are something to be taken from the places that they are made (the exam boards and beyond, the government), as from outside, and brought to and achieved for the pupil.

To ask, 'Where are data made?' is to see in these two forms of 'getting' – both out of and for – that data are co-produced in the relation between teacher and pupil but always also in relation to other pupils, nationally and internationally through examination boards and their curricula, markers and changing grading curves; regional, national and international league tables; and governments, policies and pressures to raise or lower the pass rates. Again there is, as with Jeff, the sense of achieving for the pupil that of which they are capable. Further, there is a question of (social) justice in that the data should reflect what is deserved – the just deserts of the pupil. Yet how is capability or deservedness known? The spectre which animates the 'push' of staff is that of pupils not achieving data to their capability or their deservedness. The data produced in the school in lessons may not be that which is produced under exam conditions and if grade boundaries shift the pupil may not get what the collective labour would have achieved in another.

Several teachers spoke of the pressure that they had experienced in previous schools and told stories of some staff inflating grades in order to meet expectations or increasing predictions to try and encourage pupils to take their subject at GCSE. They said that wasn't the case in this school. 'Why not?', I asked one teacher:

"There is a trust from the rest of the staff in [the head] that we will not be held to account for things that are unreasonable... Certainly, questions would be asked if my results were to take a dip. Every September subject leaders will have to answer for their results. We will have a meeting with Head of Quality Assurance - who is [teacher's name] - and [the Head] and we would have to talk through what the results mean to us, how we interpret those and kind of what we're going to do about it, what we did about it. You've got to take responsibility for those ultimately as a subject leader but that's why you get paid more."

The limits to accountability secure the validity of the data produced but again we see the member of staff talking about "my results" and subject leaders' results. There is room in this form of internal accountability for a conversation, for a discussion in which the data are interpreted, and in which there might be multiple meanings.

Nevertheless, the focus of accountability is action: what did you do and what will you do? And, this labour and the responsibility that goes with it are remunerated. With the introduction of performance-related pay it is not only giving an account that is remunerated, it is the 'getting' of the results that is rewarded also.

The tension I have outlined between getting data for and getting data out of the pupils transposes to grades as learning data a longstanding discussion over the nature of education. Debate over the etymology of the word 'education' counterposes "*educare*, which means to train or to mold, and *educere*, meaning to lead out" (Bass and Good, 2004: 162). In one, education is that which is performed on the pupil from 'outside', in the other education is the process of drawing out that which is 'internal' to the pupil. Whilst the etymological fallacy cautions one from the idea that a word's roots must dictate current meaning, both meanings are apparent in this teacher's discussion. Here though a debate about the nature of the education is replayed with the getting of data - by getting pupils through tests - becoming the locus of tension between getting data from and getting data for the pupils. In this way learning and the production of data about learning are elided. Also played out here is the tension over responsibility. Teachers are still accountable for teaching, the 'getting from' but also increasingly for the outcomes, the 'getting for' – as learning evidenced through testing in the form of best possible grades. This becomes a matter of securing a more socially just, if individualised, future for the pupil and as that which enables them to contribute to society. It is also to fulfil a moral duty to the pupil alongside sustaining a teacher's professional identity and the reputation and successful future of the school.

In this section I have introduced the idea of a shifting grammar of agency in which discursive slippages tie different actors together and in which shifting pronouns can be read as indication that it is difficult to attribute causal action in learning to teacher or pupil alone. In learning as a co-production both act but the pupil's subjectivity is submerged in 'getting the grades' and surfaces as the person enabled to make choices about the onward journey of education. In a context of local economic deprivation and trust in the link between further education and improved economic opportunities and citizenly behaviours, getting a pupil the best data she can get becomes the moral duty

of teachers. Yet, the tension remains about what it means to get the data for the pupils, in relation to mediating external systems, the 'data assemblage', or to get it out from them through their teaching and personal relationships with pupils. I will explore this tension more fully through a statement from a head of department who, when showing me pupil data and targets, echoed this tension of 'getting'.

Data and shifting agencies

"You know, the data says I should get a B but what happens if [pupil's name] can't get a B?"

Head of department in interview whilst looking at a pupil's data and targets

Each part of the sentence is sufficiently significant that, in this section and drawing on other material, I will consider them each in turn. In the previous quotations agency shifted between the pupils and teachers. Here, the teacher attributes agency to three subjects, the *data* which 'says' something, an imperative for action which rests with the *teacher* and the named *pupil* as the individualised figure of uncertainty and risk concerning their ability to achieve the grade. The question is also raised about 'what happens' if that which is expected is not achieved.

"the data says"

Data are held by this teacher as bearing communicative agency. How do written records of achievement, progress and anticipated learning come to speak, beyond the judgments of government directive or of teachers (and pupils through peer marking) that are entered into the databases? Drawing on actor-network and assemblage theories, Amoore writes under the inscription, 'Things that talk: the vitality of data', that data aren't just held to act but to have a liveliness themselves. This vitality exceeds the association with that which they are said to correspond, be that human beings, habits or projects (2013: 114). In this way data are more than the sum of the individual grades, levels and scores recorded. They attain 'objectness', or 'borrowed objectivity', through their representation as objective measures, as something beyond the fallible judgment of an individual teacher, but which nevertheless exceed that representation. Data, as things, "overflow their crafted outlines and live on to

reverberate in the world” (2013: 145); in the school, a teacher becomes data’s addressee. This recalls the language in Chapter 2 of data figured as monstrous and the flood metaphors which speak of data as exceeding the limits of human control and going beyond the boundaries appointed. Data accrues to itself agency through its relations and speaks back to the same teacher who entered the information with an objective authority.

“I should get a B”

Data are held not only to speak but to communicate an imperative. This is to say that *he*, the teacher, should get the B grade; he is held responsible. As with the use of the phrase ‘our grade’ by another teacher above, the grade becomes, through data, the teacher’s labour. It is also to say that he *should* get the B grade, it is a normative expectation. Built into the production and use of the learning data are beliefs of what a normative child is capable. Yet, this is highly contingent. The national expectation (which becomes translated through the systems of judgment as a national imperative in a world of global competition) is of three levels of progress to be made between the end of primary schooling and the taking of GCSEs. The school in which I conducted my research held four levels of progress as the target, as targets should be ‘aspirational’ so as not to unduly limit pupils. These targets are subject to change by the head teacher and by government, though these two are not unrelated, in response to current achievement. Again the head of department outlines:

“There are three key measures that the head teacher will set targets for me in September and I’ve hazarded a guess at what I think she’s going to set next year and I’ve just been to see her and we joked that she will tinker these. She may lower them, she’ll likely raise them.”

And then later:

“So the government's starting to look at three levels of progress as the mi-ni-mum expected and I can see, erm, Mr Gove², is gonna push this. I reckon we're gonna see four levels as the minimum in the next five years.” [Emphasis in original]

The data are used to set normative expectations of pupil achievement and yet are socio-culturally specific and subject to change. The push from government finds its relation in the push from a head teacher in the interpretation of the government's and Ofsted's inspection priorities and also then in the push of teachers with pupils. The uprating of targets and the expectations which underpin them is the 'push' which through data is to lead to sector-wide improvement and at least in statements by the teacher here is well communicated through the classroom.

Worth emphasising also is that whilst in some settings (Kelly et al., 2010, Ball et al., 2012) data are that which enables prediction, 'the expectation' – alongside the language of possibility – is a defining mode by which the relationship of present to future is named in this school. If the use of language such as 'data' and 'prediction' lends a realist, scientific objectivity (Kitchin, 2014a) which naturalises and reifies teachers' judgments, the language of expectation takes this a step further. If predictions can be wrong, and data faulty, 'the expectation' is the naturalised data-future *par excellence*. To say that such data are expected by government leaves little room for debate, discussion or mitigating circumstances. It is the future that is already known, performative in its own actualisation by its specific clarity and apparent certainty. It is not that which could happen (an open and possible future) but that which will have happened at a certain point (based on intentional activity or decided inactivity) (Langenohl, 2010). As Massumi (1995: 85) has it, expectation involves, “consciously positioning oneself in a line of narrative continuity”. Indeed, to conform to the learning expectations is to accept – both for teachers and pupils – a story about ability and the realisation of a *given* future state of achievement over time. This raises the question of what activity is needed to meet such an expectation, and doubt as to whether such future achievement is indeed possible.

² The minister for Education in the Coalition government at the time of the study.

but what happens if [pupil's name] can't get a B

Yet, what is the child's ability? What can they, or in the case of the head of department's statement, can't they achieve? A pupil may find herself unable to contribute to securing the future of the teacher, the school or the nation by achieving that which is required in terms of levels of progress and given as a target grade. To speak of what a pupil can achieve is not straightforward. There is no 'raw' or 'pure' scenario by which one may discern a pupil's and only a pupil's individual achievement as separated from the influence of any other actor. Yet, when success is socialised ('we are "outstanding"') and failure individualised ('what happens if [pupil's name] can't get a B?') pupils do receive grades, despite their contingency and provisionality, as communicating something revelatory about their identity (see also Reay and Wiliam, 1999). In view here is that in the teacher's statement the possibility of failure isn't socialised with learning as a partnership (as in, what if we can't get a B)? That data, in the form of progress levels and grades are individualised and internalised is worth dwelling on. Ethnographic notes may serve to illustrate this:

A teacher in a foundation English class is reading out the pupils' targets, 'It's an aspiration', she says. 'It's what I think you possibly should be aiming for'. Down the list she goes reading out the targets and the grade they are 'on course for'. I hear pupils says, "Congratulations", genuinely meant, "I don't want to know" from another. "Same as me". "These could change depending on your work" the teacher reminds. "Yeah they'll go down" one pupil chimes in. "Could we get an A or a B?" one asks. They are being entered into the foundation course so can only get a C but, "It might still possible to be entered for others depending on how you do in your controlled assessments". One pupil keeps talking about failing, "I'm going to fail", goading the teacher into disagreement and encouragement about what he could achieve. Leaving this class at the end of the lesson we walk to the next and the pupil who is showing me the way sees another teacher and says "I'm happy" to them and then moves on. I ask her why and she pauses. "I don't know... well I'm a B". Her 'on track for' grade was C but her target was a B.

In this example, the teacher's comments are framed not in the language of probability but of possibility and as contingent on a pupil's effort (not, one may note, the teacher's or other factors like illness, divorce, poverty and lack of parental employment, being a child carer, being a looked-after child or experiencing violence in the home, all of which are held as significant in explaining differences in attainment in staff training sessions). A range of affects are experienced and performed but what I would like to draw attention to is the use of a target, not even an achieved grade, as a locus of identity. Not 'I have' or 'I got' or 'I was targeted', but a sense of happiness results because 'I'm a B'. As a basis for identity, data are highly unstable, yet, for now, the pupil remains engaged and is more fully enrolled in the apparatus of education. The target, based on expected levels of progress, adheres to her body and travels with her through her passage around the school and beyond, teaches her to hope and validates her worth. She's a B.

Teachers are well aware of this performative quality of data, where data produce the effects that are named. Data are not only a source of pupils' sadness or happiness. One teacher remarked whilst looking at a spreadsheet on a computer screen in an interview:

"I love it! I love spreadsheets! (laughter)"

Matt: "Why?" (laughter)

"Why? Cos it's logical and it makes sense (pause) Everyone thinks I'm a bit sad because I love spreadsheets! (said bashfully) I think because it tells you what you need to know. If I see lots of green squares as a class teacher or a subject leader then I'm happy because you know they're on track." (emphasis in interview)

The teacher speaks of data, in this case in the form of spreadsheets, in highly affective language. They secure her feeling that the world is logical and makes sense. One can note the communicate agency ascribed to the content and form of spreadsheets, 'telling her' something beyond that which she knows through personal experience and the professional judgment which allows for the input of data in the first place. The

traffic light coding (red, amber and green) means that by quick visual inspection the teacher as data-base auditor may ascertain the individual and collective position of pupils. Indeed, it is not just that the pupils are 'on track' that is the source of happiness but the ability to know that they are that is powerful. She can see, contrary to the messiness and indeterminacy of classroom interactions, that progress is being made and this secures her identity as a good teacher. This ability to 'see' a cohort's state of achievement quickly is part of the appeal. So for another teacher:

"With the 7 and 8 data I look at the Key Stage 2 data, look at their targets for the end of year, whether it be the end of year 7 or end of year 8, and starting to analyse how many pupils are sort of below where they should be, either in line where they should be or above whether they should be."

The data offer an overview, which in relation to the targets and expectations are able to translate the demand of data to an imperative – this is where they should be. That it allows a kind of sight means the lack of it for another teacher means they would feel impaired without it:

"I wouldn't want to be without it, I think I'd feel a bit blind."

This was not a view shared by all staff however, with some confident that a loss of data, could be remedied quickly because it could be reconstituted from memory. Yet they too acknowledge that it offered a powerful kind of knowledge that they would not want to be without. Further, such data and particularly targets purport to offer a powerful kind of 'self-knowledge' about a pupil's potential. The teacher that talked of loving the spreadsheets went on to say this:

"You'll say to a pupil, it doesn't matter if you don't reach that target, they are aspirational but aim for it and I think it gives them the confidence to, well [think] 'they wouldn't set me something that's so out of reach' and they do aspire to achieve it."

Where targets instil confidence, and pupils trust that a teacher would not set them beyond what they could achieve, the performative power of such targets is self-actualising. The potential self, envisioned by the staff member on the basis of the data,

becomes shared by the pupil and their joint labour work to realise this self. The pupil and their data, and the targets derived from this, cohere into a desirable and achievable self for both the pupil and staff member who are 'on track'. The staff member acts to secure the pupil's future and in so doing secures their own professional identity and the given vision of a successful school. The pupil acts to secure their own future as one who can continue with education and become sufficiently skilled to take a place in the knowledge economy. In doing so, they act to secure the future of the teacher and school. Their futures, through the production of the expected data, are bound together.

Forging out – the misalignment of divergent futures

I have argued that data are binding teachers' and pupils' futures together such that they become co-responsible for securing each other's futures. There is a shifting grammar of agency as to who or what acts in the process of learning and who is held accountable for its achievement. Yet, there are misalignments, divergences and slippages. For example, what of this claim above that targets give the pupils confidence and the trust that is invested in the teacher's judgment and that staff wouldn't ask for the utterly unachievable? The ethnographic vignette above and interviews with pupils bear this out but also suggest a more complicated story. When asked if grades or targets ever prompt surprise the answer was an emphatic 'Yes' in every interview. The reasons differed.

For Dave (a boy in year 10), Brian (a girl in year 11) and Mark (a boy in Y10) along with several others, the reason was that the target didn't accord with their own perception of their ability or understanding.

"One of my predicted grades is a C in English and I've no idea how I'm going to get that cos I'm not very good at English. I've just got to try really hard to get to it to prove that I can actually do this and I just want to make a point. But it's gonna be quite tricky."
Dave

"Yeah, I'm supposed to get an A in physics and I don't understand any of it. That's really bad. (laughs)"* Brian

"Yeah, I got like all the high things in my SATs so it like boosted everything up and in French, I'm not like the best in French, but I've working hard and found out that I'm on, predicted an A so I've just got to go on from there and carry on, work hard. I was like surprised at that 'cos I'm not really good at French." Mark

These kinds of response were evident in many of the interviews with pupils. Targets didn't always inspire confidence but often were narrated as a motivation to increase effort. The surprise brought into conflict a pupil's sense of ability in a subject, as something one is 'good at' or not, with a target of future achievement with its implication of a future self who is more capable than the pupil thought they could be. That is to say because the pupils are associating achievement with a particular kind of person who *is* good at something these targets ask them to imagine themselves as other than they had been.

In some of the accounts, the surprise was not only the target but the achievement of it. In an extended quotation Arya (a Year 11 girl), who had moved from another school, narrates some of the things that had caused her to feel surprised:

"I'm sitting on a C grade and he [the Math's teacher] comes up to me and says, 'right, so you're going for the A grade next lesson are we?' and I'm thinking, 'Noo!' And then for my first, when I re-sat my Unit 1 exam with them I came out with an A and I'm sat looking at the bit of paper and I'm like, 'Sir, I think they've made a mistake on my printing' (laughter). So you're constantly surprised by things like that. And then you get nasty surprises like, in English, I really thought I'd done well in the English exam. And, I didn't do bad, I came out with an A and I was one mark off the A*. I'm kind of just sat there, I'm like, "I could've just done with that A*". So, you're constantly surprised by things like that. I think target grades scare you most. Because for things like French when they tell you that they expected you to get the A in French and you're thinking, 'eurgh' I might not quite get there. But it's not ever really bad surprises because we know if we work at it we'll get them there. They're kind of reasonable."*

In moving from one school to another Arya encountered a radical reimagining of her capability by staff. Gaps emerged between what she thought she was capable of based

on past experience and teacher expectations and the new expectations she was faced with. 'Nasty' surprises came when the results were lower than expected and the impression of how the exam went did not accord with the result awarded. That Arya was constantly surprised sits in a complex tension with her belief that the targets are achievable with work – even if her feelings do not match this – and that the targets are reasonable. Rationality and emotion and the futures they portend as expectation and a surprise are held together often simultaneously.

Pupils do achieve grades that are higher than those expected or targeted. This positive surprise could turn to upset though if the records of what the pupil was 'on course for' weren't changed quickly. Nicki (a year 10 girl) had a target for a B in a Health and Social Care qualification but got an A* and a B in her practice exams and had a 'working at' grade of D. She says:

"We've got better than what they say we are." Nicki

Nicki's language expresses the same slippage between the grades 'got' and what the teachers say they 'are' as a matter of ontology and not simply achievement. That the working at grade has not changed is sensed as a matter of injustice and a denial of her effort and achievement. The working at grade and the associated targets envisioned a present and future self that had become misaligned with Nicki and she now saw herself. Where targets were exceeded they were, in other cases, raised, though they could be left for a time to see whether the learning gain was sustained.

For Llewellyn and Jose, their sense of surprise did not leave them feeling only disappointed but also betrayed. Again I offer an extended quotation in which they are talking together to me:

Llewellyn: I was let down when I found out I was meant to get an A and an A and tried me hardest in a science exam and I literally just got bottom, the bottom of low C and they said it wasn't good enough because I'm expected like an A*. That just put us down completely - how am I meant to get that from a C?*

Jose: They even told you though, didn't they, they were like, 'you're workin' at an A' and all this in lessons, 'you'll definitely get it', weren't they?*

Llewellyn: It's daft 'cos you know that you're not.

Jose: Then to me, 'ah you'll definitely get a C or higher, definitely'. Come out the exam, 'ah, you got an E'.

Llewellyn: Then it was just a let-down because they said you'd definitely get it, so it makes you think: don't even try.

Jose: I got an E and they started shouting at us. Beforehand, 'ah, you're doing well, you're getting your homework in, in time, you try hard in class. After that, 'you're not trying enough, you don't do enough homework, you don't stop back at nights. It's because I've got a job, you can't do both, can I?

Llewellyn: They tell you everything is absolutely fine and that you're doing really well and you're expected to pass and say my target was an A, then I do an exam and come out with a C, they move me target down. They say I'm not doing well enough they want to keep us back every night for revision.

For Llewellyn and Jose, the teacher's use of data establishes a promise, not simply a prediction, and an expectation, not only an aspiration. That they feel 'let down' suggests that these systems of judgment function in relations of trust where (as they experience it) praise for effort lasts only as long as it is matched by achievement. The shifting grammar of agency resolves in the case of missed targets to the accusative: 'you're not', 'you don't', 'you don't'. The misalignments suggest that they suspect the use of targets and high expectations is a strategy which they rationalise as perhaps never according with their sense of self ('*It's daft 'cos you know that you're not [going to get it].*') Yet, that they feel let down appears to imply that they had believed their teachers and at the point that interventions begin which require more effort Llewellyn thinks, 'don't even try'.

In Llewellyn and Jose's words we see '*what happens if [pupil's name] can't get a B*', blame in some cases and further interventions in others to remobilise confidence and

address issues of a lack of knowledge or skill. One of the practices staff use in attempting to secure the pupils', teachers' and school's futures against these risks is through frequent meetings. Each week the school leadership team looks at an overview of the latest data and amongst other things talk about each child at the school who is not achieving their expected progress in English, Maths or in both English and Maths. They talk to the head of that department about what interventions are in place to help them. This surveying practice, termly 'censuses' and other quality assurance processes seek to minimise the level to which teachers are exposed to the pupils as risky, unreliable actors and as a threat to professional identity and the future of the school in a competitive environment. This is not to say that this is the only or even the main relation between pupils and teachers: there are many others which are experienced a good deal more positively. Indeed for many teachers these actions exemplify what it means to care. Yet the misalignments, divergences and slippages point to conflicting ways of knowing and imagining who a pupil is and who she will be. Data becomes a site of conflict through which normative visions of schooling and the future and regimes of judgment create the imperative for teachers and pupils to act together.

Sometimes it's not just that pupils cannot achieve that which is expected of them but that they do not wish to. When looking at her data Amy (Y11), who wants to be a vet, reflects:

I think my on course for grades are correct and I think I can achieve my student target grade in maths but other than that I think the A in all of these is a bit high [points to targets for the other subjects on the print out]. Like, I'd be happy with, if I just passed my English and I'd be happy if I just passed my Chemistry and Physics. I'd like a B in Biology so I can take that further.

A gap existing between Amy's on course for grades and her target grades didn't appear to cause her concern or surprise as it had some other pupils. She had a sense of what she wanted that was closely connected with a sense of what interested her and that she could see as relevant to her future. Yet, it was not just future achievement and

options that were being managed with the expectations offered to her but also the ability to take control of her present and future emotional life:

Like it doesn't bother us that I don't agree with them or that my on course for grade is a couple below the target because (.) I don't like to expect too much of myself because then if I do just come out with a C then I don't get disappointed. So, I just would prefer to accept getting the lower then if I got the higher I would be very happy, if I got the lower then I'd be happy because I was expecting it.

Rather than accepting the grades and targets, and implicitly the judgments of teachers, Amy is herself judging them (both teacher and target), not as right or wrong (or 'correct' as earlier) but as a matter with which she is able to agree or disagree. In contrast to the government narratives of constant improvement and maximised potential, Amy sets her own targets that aim to stave off the risk of disappointment but still achieve her desired future.

To 'not be bothered' should not be mistaken as a lack of care, merely understood as care that is otherwise directed. With this, I return to the quotation which opened the chapter where a vision of a different future becomes a problem:

"He said, 'Don't care what I get, I'm goin' to work for me dad'. That's nice [for him] but what about *me*?" – a teacher tells colleagues about a pupil's response to a target grade in a departmental staff meeting.

(From ethnographic notes taken whilst observing a staff meeting)

How has a pupil's decision to pursue employment after school with his father, and the irrelevance of a particular grade to that future, come to present a problem for the teacher, which leaves her abandoned with respect to her own future and obligations? The teacher is made responsible for realising a normative vision of the successful schooled subject who is ready to achieve a particular social, economic and educational future, in the examples given here this means college, as the next step in an educational journey. Where there is a sense of compact between teacher and pupil in attaining this goal - the aspiration inculcated through the schooling system itself -

accountability, through a proliferation and intensified use of data, works to bind together school's, teachers' and pupils' futures; their futures are co-colonised. This breaks down and is rendered visible where diverging visions of the future and the slippages between pupils as they perceive themselves, as they are known by teachers through personal interaction and through the data lead to contestation. Data form the locus for a shifting grammar of agency. Futures are forged together, both for staff and pupils, through the imperative and process of producing the data expected of them. They are made mutually responsible for securing each other's futures but where those ideas of the future diverge the demand for data prompts contestation.

From data double to pupil multiple

One way in which theorists have been seeking to make sense of the relationship between a person and the data made about them is through the idea of the 'data double' or 'data doppelgänger' (Selwyn, 2014; Williamson, 2014c). A 'data double' (Haggerty and Ericson, 2000) is the abstracted knowledges made about a person which then adhere to a body and travel with the person, in this case around the school. These data become a 'mobile body' that circulates beyond the apprehension of the 'private body' (Urry, 2007) so that these persons may be identified, monitored and tracked but also monetised, securitised and governed. The risk of language like 'data double', (as nicely alliterative as it is) is that it creates an imaginary in which body and bytes are ontologically exclusive, and related together through the neutral system of data production. It presents the relation as a single indexical link, that is, a correspondence between one body and a dataset – that where there was one, there are now two. The phrase 'data doppelgänger', again drawing on the sense of a lively monstrosity, as in science fiction accounts of clones, imagines a copying, a duplication of that which already exists but is 'manufactured' rather than 'natural'. Williamson (2014c: 11 citing Raley, 2013) is careful in his language emphasising that such a data double is "aggregated, 'flecks of identity'", a composite figure. I think this better fits what I have described and argued for above.

In the school what I see is a kind of strategic essentialism which calls the body and bytes to cohere at particular points in time for the purpose of decision-

making/judgment which, by necessity, involves the retention of some data and the discarding of other data. What is called upon – or privileged – and what is ‘forgotten’ – or ignored – is part of the politics of data (Kitchin, 2014a). The pupil’s data persona is constructed from multiple sources of information, a “cybernetic system” (Facer, 2012). I argue that a better naming would be ‘the pupil multiple’ (after Mol, 2002) or the pupil as ‘fractionally coherent’ (after Law, 2002) where multiple sources and forms of data are held open (much of which can be contradictory) but are called together, at which point they are rationalised, whereby that which is deemed superfluous is provisionally discarded. Mol (2002) is clear that her study of atheroscleroses, ‘the body multiple’ from which I take my term ‘pupil multiple’, is not about how such disease is known but how such a disease is enacted. However, I use it to denote the singular multiplicity of ‘a pupil’ who is encountered through a variety of sites (classroom/corridor/cafeteria) and through a variety of means (personal interaction/testing/spreadsheets). This is the pupil as plural, insofar as there are multiple practices of knowing, and where the pupil is temporarily unified for the purpose of judgment/decision-making. Coherence is achieved by sorting, sifting and discarding some data and the decision is made in relation to the data composed.

An example may help illustrate this. Decisions about organising new pupils into ‘classes by ability’ when they enter the secondary school I studied were made on the basis of the levels achieved in national tests taken at the end of primary schooling (known colloquially as SATs) and on the additional testing undertaken at the start of secondary school (CATs – Cognitive Abilities Tests by the company GL assessments). So, as one of the Deputy Heads has it:

“Any one set of data is always subject to flaws and so for example if we relied purely on KS2 data that (.) in it's very simplest form, a kid could just have had a bad day on the day of the test. They could have just been feeling unwell, there could have been trouble at home and the Key Stage 2 tests might not reflect their true ability. Plus, the Key Stage 2 tests just test their knowledge rather than their reasoning skills, the CAT tests their reasoning skills as well. But you know, CATs themselves (.) nothing's terribly reliable. There are all subject to all sorts of (.) problems. We've had CAT test, just last

year, a pupil deliberately tried to do badly because he wanted to go in a bottom class because he thought he was going to get an easier ride. And, you know you get kids that come from KS2 who've obviously had extensive coaching and their Key Stage 2 tests are a lot higher than their ability tests would suggest they could do. So it's [doing CATs] just trying to get another picture alongside (.) and we would put (.) we would not trust one more than the other anyway. We try and look the overall picture."

Here data are portrayed as inherently flawed, in contrast to the way they tend to be presented to pupils. The conditions of testing (both adverse in illness and enabling through coaching) could make a difference even apart from attempts by pupils to 'game' or 'hack' the tests for their own purposes. Multiple sources of data are put together, where some are more trusted than others. Some data are brought forward, others discarded and some become the basis for a puzzle, where the pupil had very much lower scores than would have been expected in his primary school tests. Added to this are other forms of written judgments about special educational needs or behavioural issues. The first weeks of school see pupils changing classes in response to the judgment of staff, (as the data didn't reflect the new pupil as she discloses herself to staff in lessons and marked work). Divergences are interrogated through knowledge of the purpose of the test and comparing the different contributions to, as another teacher put it, 'the big picture'. The data and the composite figure produced precede the pupil's encounters with their new teachers and the initial and provisional decisions about setting and streaming are made on the basis of encountering the data personae. The different forms of data and the teacher's subsequent knowledge of a pupil through embodied encounter variously cohere, diverge and blur (Figure 11).

	Ontological status of bodies and data	Relationship between bodies and data
Coherence	Ontologically distinct	Corresponding
Divergence	Ontologically distinct	Incommensurable
Blurring	Ontologically indistinct	Inseparable

Figure 11: Various relations between body and bytes, or the embodied person and the data made about them

Coherence occurs where body and bytes are distinct but corresponding. Knowledge of the pupil through personal interaction is held as a separate domain of knowledge from that produced through different tests but such knowledges are not problematised as they are in accord. The data are understood as consistent across different modes of producing knowledge about the pupil: the different tests give acceptably similar results or those in line with expectations and this corresponds with the personal knowledge of the teacher.

Divergence occurs where body and bytes are distinct but incommensurable. Knowledge of the pupil through personal interaction is still held as a separate domain of knowledge from that produced through different tests. However, such knowledges are not understood as consistent or synthesisable – either because the teacher’s personal knowledge or a pupil’s self-concept does not accord with the data made about them or because the data themselves cannot, within the current frames of references, be made commensurable. For example, a pupil may achieve very different scores between a past paper and an official examination and it is divergence that leads to pupils’ or teachers’ sense of surprise or being let down.

Blurring occurs when body and bytes are held as ontologically indistinguishable. This is to say that knowing the data is to know the pupil and vice versa. This can be understood in several ways. First, it can be understood as a claim that the personal knowledge of the teacher is of the same nature as the knowledge made through tests – both rest on judgment and abstractions. It can also be understood in the identification with one’s data, such that they are indistinguishable, because data are held to reveal what is ontologically real – *‘I am a B’*. Further it can also be understood in a more performative sense, that the production of data is shaping the body from which it derives. In this view there is a blurring because the body is never ontologically separable from the means of knowing it. Following Williamson’s (2014c) use of Hacking (2007: 285), the production of data offers a new way to be a body, a new way of ‘making up people’ and the looping effects mean that body and bytes are simultaneously co-present and renewed.

These modes of relating bodies to data and datum to datum co-exist within the school and suggest that there are multiple ways of making sense of the ontological and epistemic status of data. Where coherence is evident, assumed or expected the relationship is not problematised. Pupils and teachers, in responding to the demands for the expected data, accede, persuaded that in doing so they are acting together to secure their moral, given, successful futures. However, the misalignments, divergences and slippages point to conflicting ways of knowing and imagining who a pupil is and who she will be. Indeed, in some cases it suggests a blurring, that instead of 'me and my data', that 'I am my data' or less totally 'My data are (part of) me'. These modes of coherence, divergence and blurring are important in their consequences because the need to respond to divergence occasions the interventions already described but are also of fundamental importance because they relate to what pupils experience as care in the context of data. The significance and implications of this is the subject of Chapter 7.

Conclusions

In this chapter I argued that a close reading of pupils' and teachers' language about learning data could be understood as a 'shifting grammar of agency'. The movement between different personal pronouns and the unusual sentence structure was evidence, I argued, less of poor grammar but of the difficulty of attributing learning achievements to a single acting subject. This shifting grammar takes place in a context (as outlined in the previous chapter) in which - through data - the future of the school is at stake and teachers are increasingly asked and expected to be accountable not only for their teaching but also for pupils' learning. Such discursive slippages tie different actors and their actions together. The co-production of expected learning data is held as a moral duty and a means of holding opening a young person's choices – that they might choose ongoing education. A tension emerges over data as something to be got from pupils, related to understandings of education as the drawing out of something inherent in the learner and something to be got for the pupil, through the teacher's skill in mediating the socio-culturally specific and yet

changing data production assemblage which may not be neutral with respect to their pupils.

I extended this by considering how the shifting grammar of agency also incorporates data. In this way data, pupils and teachers are all sometimes held as subjects and objects. Specifically, I considered that data were held as bearing communicative agency. More than this data could communicate imperatives, where the recorded judgments of teachers returned to them with the force of borrowed objectivity. This was more acute in that pupils and teachers were seeking to realise not predictions but expectations and it is the givenness of these futures that appears to be particularly potent. Yet, there is doubt as to whether what is expected is possible and this doubt turns the potential inability of the pupil to achieve that which is given into a risk. The doubt over the pupil's capacity doubly matters to teachers out of concern for the pupil and their future but also for the teacher's own future and for the future of the school in a competitive and accountable environment. In this way the pupil and teacher are bound together through the need and desire to produce the data expected of them. Where desire, ability and effort align there is sense of untroubled coherence.

However, the slippages between pupils' self-perceptions, teachers' judgments and 'what the data says' lead to contestation. I sought to understand pupils' experiences of this through asking them about surprise and this met with an emphatic response. Pupils were sometimes surprised because the target did not accord with their imagined future achievement and through this their future self. Sometimes they were surprised because they did in fact achieve that which had been predicted. Their effort had been engaged but they had not fully come to believe that which had been expected of them. Still others found the surprises could be nasty where they achieved less than had been predicted. As such they became subject to interventions from staff and sometimes their own efforts to manage the threat of disappointment. However, diverging visions of desired learning or earning futures in particular threaten the compact between pupil, teacher and school. Teachers are exposed to young people as a risk to their professional identity, the successful future of the school and by implication the nation. These make data the site of contestation.

The contestation around data challenges any kind of simple idea of 'data doubles' in which the body is faithfully duplicated in bytes with a single indexical link between a person and their data. Instead, I suggested there was a need to understand the data personae of pupils as a composite. A particularised version of the pupil multiple is called forth for different purposes and with different data privileged or ignored so that coherence can be achieved for the purpose of decision making. I outlined multiple relations of coherence, divergence and blurring of learner and data in schematic form but all of these were discernible in the interviews and observations presented in this chapter. I did not resolve these relations in order to present one as 'the best way' to understand data in the school. This is because whilst the three accounts may not be philosophically compatible those ways of understanding the relations between a pupil and data are practically held by different people in the school. And where ideas have consequences they have import for whether data are trusted and incorporated or doubted and held off.

The demand for the production of expected (or 'the best') data sometimes aligns and sometimes departs from the desires of the actors involved. Irrespective of coherence, divergence or blurring, hopes and disappointments, surprise and acquiescence, care and lack of it are experienced in relation to data – whether through depending on them or formed against them. Yet, these are not only individual emotions and in the next chapter I consider the ways in which data are used to create and maintain spatially-specific shared senses of progress-making (or the lack of it) that are collective and yet also individualising. I focus on 'progress' as in the school studied it is one of the predominant modes by which education is related to futurity through data.

Chapter 6 | Atmospheres of progress in a data-based school

The school is a place of multiple futures: some explicit, some implicit, and data production becomes part of the means of achieving particular futures and part of the practices of future-making. These data binds pupils' and teachers' actions together in the present as they become responsible for securing each other's futures. Yet, where different futures are envisaged than those required through the expected data the misalignments cause contestation and occasion interventions. In this chapter I explore the shift in the school from a focus on absolute achievement to progress as one increasingly dominant kind of imagined future (that of continual improvement towards a defined goal). Indeed, in this school, 'progress' is the predominant relation with futurity that the production of data is organised around and enables. Attending to this relationship allows me to further particularise the means by which the efforts to align or the fact of the misalignment of people's education, data and futures comes to be experienced.

This focus is on an emerging feature of data-based living in schools: the use of data to create and maintain a sense of 'progress' and the affective relations that are associated with these sensibilities. This is not progress solely as developmental fact, logic, ideology or discourse but as felt. That is, a positive feeling in relation to a sense of onward movement – as an increasing mastery of knowledge and skills. I use the term 'atmospheres of progress' to describe the occurrence of spatially-specific shared senses of progress-making (or the lack of it) that are collective and yet also individualising. While data may be presented as inherently wedded to rationalist, technicist and/or bureaucratic logics (see in Facer, 2012), I would like to suggest that data does not only change or enable particular modes of thought but also modes of individual and collective feeling. These modes of thinking and feeling are not static but, being informed by writings on the ontological status of young people as both beings and becomings, are dynamic. My contention is that schools are places of *making* progress where forms of testing create temporal comparisons (a before and after) that allow for the hierarchisation of difference and change. I begin by offering a sense of this negotiated data-based life in school through the following vignette. I go on to take

this up in justifying the conceptual work that leads me to the term ‘atmospheres of progress’ which I unfold through the rest of the chapter.

Finding yourself in the spreadsheet and feeling good

The pupils gather to the teacher. Now in secondary school they have been doing team building exercises in Physical Education classes. The teacher hands out two copies of a printed spreadsheet and the pupils take them to the floor nearby. Sprawled out, lying down on their front, others kneeling, the pupils trace out together their ‘levels’ gathered around the pages. Criteria within each level are marked as achieved or yet to be met, and every pupil’s attainment data in the class are included. There is an informality about the postures adopted and the relaxed, even animated communication. ‘I’ve got a [level] 4 in this one’, says one young person. ‘Yeah but you’ve got the 5 for this part already’ another replies.³ The tone of the communication is light; the only overt antagonism occurs when one pupil wants to turn the page over to look at their entry. ‘Read them [your targets] so you know what you need to show on Friday’, the teacher calls. Pupils move to an ‘Assessing Pupil Progress (APP)’ board on the wall and again help each other look up on the board what they each need to do (and show they can do, see Figure 12). APP boards for different subjects are present throughout the school.

Core skills – Level 4 - 5

- Listen effectively to others in the group
- Work with others to plan how to complete a task
- Support and help other members of the group when they don’t understand
- Suggestion a solution to a problem

Intermediate skills – Level 5 - 6

- Assume a leadership responsibility with your group
- Identify strengths and areas for improvement within your group
- Suggest alternative solutions to problems

Advanced skills – Level 6-7

- Use creative approaches to solve problems
- Analyse and evaluate the effectiveness of the group

Figure 12: Assessing Pupil Progress (APP) board – communication and problem solving skills

³ This vignette is drawn from ethnographic notes, and the young people’s words in this particular section are not verbatim.

The numbers on the spreadsheet locate the pupils' current evidenced level of achievement and tell them (with reference to the boards) what they need to do next. This is learning as progress through defined levels of knowledge learnt and skills demonstrated. I see spreadsheets of various kinds elsewhere too, put up in other lessons on the electronic whiteboards. Groups of young people go up together and trace out each other's levels. They help each other make sense of what is done as they look at the filled entries for assessments and what is still possible as they see the empty spreadsheet columns and rows. They encourage and console each other. These, as some of the most visible moments of encountering data, are taken up to provide occasions for sociality, even the strengthening of friendships through relations of care. The young people, a surprising amount of the time, appear to come out of these encounters with data feeling good – irrespective of their level, most of them are making progress. The sense of feeling is collective – as almost passed around through touch, looks and laughter between pupils and also with the teacher – at the same time as it is individualising with respect to locating pupil performance as a feature of the self, shorn from relations. This sense is visible in a pupil's demeanour and bodily comportment and the tenor of their interactions with others, but it is also beyond any one pupil as some kind of collective good feeling 'in the air'. It is, as I go on to discuss, something atmospheric.

Encountering atmospheres

To make sense of this vignette and other moments like this, in which data are taken up in learning spaces in the school, with reference to concepts like emotion or school ethos, seem to me to be inadequate. While emotion is all too easily personal and individualised, ethos is also too easily imagined as collective but free-floating from socio-material and historical circumstances (Anderson, 2014). Emotions are clearly experienced by the young people in relation to data, and yet it would be a mistake, I believe, to reduce encounters with data to the biographical, as private feelings evinced in relation to a digitally reflected mirror of the self-in-bits-and-bytes. While Bragg and Manchester (2011 and Manchester and Bragg, 2013) argue for an understanding of school ethos that is more consonant with the way I am making sense of this mode of

feeling (as interpersonal, material and social and continually negotiated), a key difference is that ethos retains a sense of relative obduracy as something which ongoingly characterises 'the school' as a whole. In contrast, I want to name something which is more fragile, more fleeting and operates in 'pockets' or spheres which emerge and envelop members of the school in some classes and not others. And, in the context of atmospheres of progress, this mode of collective and individualising feeling is something which can be made and sustained and falter in the same lesson with the same pupils and teacher in relation to the production and use of data.

For this reason I turn to the concept of affective atmospheres which geographers, among others (see for example Adey et al., 2013; Anderson, 2009; Ash, 2013; Bissell, 2010; Edensor, 2012; Hemmings, 2012; McCormack, 2008a, 2008b, 2012 and Stewart, 2011 which are discussed below), have found interesting, not least in part because of the way it holds a "series of opposites – presence and absence, materiality and ideality, definite and indefinite, singularity and generality – in a relation of tension" (Anderson, 2009: 77). There is an ambiguity to atmospheres, in both the meteorological sense and of those affectively sensed (Adey et al., 2013), that seems to make them interesting empirically and theoretically. Indeed, it is the multiplicity of the referent for the term atmosphere (Anderson, 2009: 77) that allows so many to become *attuned*, to use Stewart's language (2011), to so much that has intensity and force in the world. Yet, whether one says 'attune to', 'attend to' or 'apprehend', it is still assumed that there is *something* to be openly disposed towards. While Bissell cautions those attuning themselves to affective atmospheres that such atmospheres should not be 'reified as a "thing"' (2010: 273) it is precisely this sense of 'thingness' to which I would like to pay attention. As a 'thing' such atmospheres can be worked on and worked at, known intensely and with particularity, as something to which people attribute causal power. While it is perhaps more straightforward methodologically to attend to atmospheres (as-a-thing) themselves, it is also appropriate to attend to the range of bodies (human, discursive, non-human) from which atmospheres may be said to emanate (Anderson, 2009: 79-80).

Although attention has been drawn to the spatiality of atmospheres (Anderson, 2009: 80), with the possibility of a centre and circumference, however indefinite or unstable, there appears to be a reticence more broadly to consider atmospheres as bounded. This would be to account for the experience of atmospheres not so much as backdrop (Bissell, 2010) or the 'hum of the ordinary' (Stewart, 2011: 446) but as suddenly and powerfully encountered as with the crossing of a boundary. To pass from one sphere to another or to feel oneself held inside or outside of a collective affect. This is to name experiences as discontinuous even if they are theorised as continuous but with changing intensities, not so much created as recomposed differently. The apparent power to change or 'kill' the atmosphere can come with the same startling rapidity, where someone's mere bodily presence ruptures the collective interpersonal sensibilities as with the 'killjoy' (Ahmed, 2010) or the 'party-pooper'. Although I would suggest that geographers need to make room in their accounts of atmospheres for this kind of experience, it is not the case that these experiences are set apart from the material elements of the world (as if immaterial), or the lived experiences and socio-economic histories of those persons involved (as if ahistorical). They are not spontaneous as they may feel.

So as Ahmed (2010: 65-66) writes,

"Let's take this figure of the feminist killjoy seriously. Does the feminist kill other people's joy by pointing out moments of sexism? Or does she expose the bad feelings that get hidden, displaced, or negated under public signs of joy? Does bad feeling enter the room when somebody expresses anger about things, or could anger be the moment when the bad feelings that circulate through objects get brought to the surface in a certain way?"

Ahmed's language of surface implies a delineation between what is apparent and that which is present but hidden. We could understand this to refer to the potential of bodies to affect and be affected which even when actualised may not be evinced. In other words, these various bodies may be affected but have the capacity to hold hidden the circulating feelings until a moment of eruption or encounter. This suggests

that feelings through objects (such as the material presence of data in the school) may have a history that is not immediately visible. Such atmospheres would not then be spontaneous, discontinuous experiences for a perceiving body even if that body were to account for that experience in those ways. This presents a methodological problem, however, as to how the expressivity of an atmosphere comes to be felt and known and named in spite of such indeterminacy. Indeed, if one is to think of atmospheres in relation to the socio-material histories of both people and their data with histories which are not immediately visible, familiar methods might need to be taken in less familiar directions.

As I described in the methodology chapter I considered the particular ways in which I could use the methods I chose to attend to the life of data and of people's experience of data-based living, in particular thinking about the modes of feeling – the affective atmospheres – made, sustained and contested in relation to data. I detailed the manner in which I adopted an ethnographic approach to sense the atmospheres of the classroom and interviews to check whether my impression of the modes of feeling accorded with those of others. In this chapter I draw together elements from all of the phases of the research alongside policy documents. Before I turn to staff and pupils' experiences of data as implicated in these processes, I would like to make an argument for why 'progress' has taken on a new significance in the English state education system and why understanding this is necessary in accounting for some of the proliferation of certain kinds of data in schools.

The turn to progress

Progress in education has taken on new significance in the English state education system in recent times, starting under the last Labour government and continuing with the Coalition government of 2010-2015. As I discussed in the last chapter a key question of educational accountability and judgment making is how to separate the work of the teacher and school-as-a-whole from that of the pupil when teaching and learning are co-produced. A shift was seen under New Labour (1997-2010) from judging the school on the basis of absolute achievement to the progress made while at the school (see Figure 13).

Achievement data are based on final grades which in the case of this secondary school are mostly GCSE results (General Certificate of Secondary Education). GCSEs are typically taken between 14 and 16 years old (Years 10 - 11). In this school, pupils make GCSE choices in Year 8 (12 – 13 years old) and start their courses in Year 9. This is a year ahead of many schools. These results are used to create the measure '5 A*-C', a measure of the percentage of pupils to achieve 'good passes'. Sometimes this figure must also include an A* - C grade in English and Maths. These percentages are used in league tables and are often the most prominent measure (Goldstein et al., 1993).

Progress data are based on the difference in assessed grades between two stages of education. In this case between the end of primary school (at 10 and 11 years old, 'Year 6') where Key Stage 2 tests are taken, called National Curriculum assessments and colloquially known as SATs and – at the time - the end of compulsory education (Key Stage 4) where GCSE results are finalised (see above for a description of GCSEs). The GCSE grades are converted to a number so that levels of progress is a calculation subtracting the final result from that achieved before the pupil entered the secondary school.

The 'expected' level at Key Stage 2 is four and the number of levels of progress expected between Key Stage 2 and 4 is three. This is the equivalent of a C grade. English and Maths are calculated from KS2 results directly while other subjects use the average Key Stage 2 Result as the starting point.

Figure 13: Achievement and progress section reproduced from Figure 4

Llewellyn in discussing this shift (2013: 8) writes,

"in New Labour's first white paper they state that 'school performance tables will be more useful, showing the rate of progress pupils have made as well as their absolute levels of achievement (DfEE, 1997, p. 6). Specifically they will 'focus more on the progress made between different stages'. (DfEE, 1997, p. 26)"

The introduction of progress data (and it is important to remember this is an operationalisation for a particular idea of progress) is justified as a question of utility. The problem assumed is that the number of General Certificates of Secondary Education (GCSEs) a pupil attains and at what grade did not give any indication of where they had started out when they entered the school. Perhaps they came in at low levels of achievement and made rapid progress, perhaps they came in with high

prior levels of achievement and school had very little effect in helping them improve. Furthermore, sufficiently significant proportions of the variation in GCSE grades are explained by factors that are outside of the school's control, making them unhelpful in assessing the role any particular school has played in a young person's education (Goldstein et al., 1993; Rasbash et al. 2010). The addition of progress data promised to remove the differentials in prior attainment and to isolate the amount of progress made while at that school. This is meant to stop the rewarding in league tables of some schools based on the cultural capital of their middle class pupils and stops other schools being failed on the basis of the structural disadvantages which affect the pupils they teach. Conversely, the shift is held as allowing the idea of equality of opportunity (and outcome in a very specific sense) to be held as all pupils are expected to make the same levels of progress irrespective of their socio-economic position or family circumstances. Furthermore, it allows for the putative freedoms of schools from prescriptive methods dictated by central government while increasing centralised control based on the specification of which outcomes are to be held to be valuable.

In line with this, and to return to discussion of this document in the previous chapter, the Teachers' Standards Document (2013: 7-8), issued by the Coalition government's Department for Education continues this theme, and selected parts outline that a teacher must:

- Promote good progress and outcomes by pupils
 - o be accountable for pupils' attainment, progress and outcomes
 - o guide pupils to reflect on the progress they have made and their emerging needs
- Make accurate and productive use of assessment
 - o make use of formative and summative assessment to secure pupils' progress
 - o use relevant data to monitor progress, set targets and plan subsequent lessons

From this, we understand that teachers are no longer held to be responsible merely for teaching, the 'input' – to use that language – but to promote, secure and be accountable for progress, that is, for 'outcomes'. It is possible to note also the connection made between data as enabling monitoring, the setting of targets and the planning of subsequent lessons. In this data are enrolled in producing knowledge of the present in relation to the future and implicit in practices of future-making. But how may a pupil be said to have made progress? How is this known, indeed produced, as knowable? What are the conditions of possibility for 'progress'?

Producing progress requires many things (and the following is not exhaustive): the cultivation of professional judgment and methods for standardising this judgment nationally: teacher knowledge and skills in data handling and analysis, reconfiguring and fixing knowledge and skills into hierarchical (stagist) national curriculum levels which pupils can be shown to have achieved. Furthermore, database software and/or spreadsheets are used which calculate the levels of progress made (see Figure 13).

One of the sites for shaping the collective knowledge and skills of staff that I observed was an after-school CPD session on the use of data in the researched school. One of the teachers leading the session said which page of the spreadsheet staff should pay most attention to:

"For me the best sheet to be looking at is progress; ultimately as a teacher that's what you're judged on."

Although a pupil making three levels of progress between 11 and 16 years old can be said to be making nationally expected progress, four levels of progress is what all the staff are expected to promote within the school I researched.

An example of the reconfiguration of knowledge is that of vocabulary in English lessons. Schools which seek to operationalise this idea of measuring progress in usage of English language might make a list of words categorised into levels: some are level 4, some level 5, others level 6 and so on. A comment to a pupil who is said to be working at level 4 might be to try and use more level 5 words. The pupils know what

level they are on and what they are working towards, and because of the widespread use of self-assessment and peer marking, they may internalise systems of judgment through marking their own and others' work (see previous chapter and Reay and Wiliam, 1999 and Ball et al, 2012).

In this way a concern for progress is bound up with modes of measuring, that is, producing, progress. This follows alongside the discursive shift from *teaching* being the proper focus of teachers' efforts to the issue of whether *learning* is actually taking place (Barr and Tagg, 1995). In 'learner-centred' education (Schweisfurth, 2013), teachers are made responsible for producing learning – that is, they are made responsible for producing a very specific form of enumerated progress (Allen, 2012), separated (or 'dividuated', after Deleuze, 1992) from class, ethnicity, gender and family structure and circumstance. Even if everyone cannot achieve the same outcome, all should make progress and of at least three if not four levels. Ofsted, the Office for Standards in Education, Children's Services and Skills, which inspects the majority of England's schools, expects that outstanding teaching is that which "over time ... is enabling almost all pupils to make rapid and sustained progress" (2012: n.p.). Lesson observations in schools as part of 'quality assurance processes' shift from looking at what the teacher does to finding out what the children have learnt. A proliferation of data about pupil learning is the result. The data-based school of the title is not just one in which data are made about pupils but also one in which decisions are made of the basis of these data. The teacher is not, as conventionally held, a transmitter of information (or in Freirian (1996) terms 'a banker' of a static body of knowledge) but a data producer and analyst who enrolls the child as the same – as a social scientist of their own learning ability, achievements and life trajectory. The school might not be thought of as an 'exam factory' where high-stakes public testing is in view but as a 'data factory' as everyday practice. Data become one of the elements that allow progress to be known (or rather produced) as such. Evidencing a 'then' and a 'now' and 'not yet' enrolls pupils' past, present and future selves and bundles them together: cognitively, as a story of improvement for public accountability and affectively, as a technique for pupil and staff motivation.

This language of business management is picked up by a head of department at the school:

"I'm actually saying [to my departmental team] these are our deliverables, you know, it feels like I'm at Tesco's. And I'm saying you know we must sell all 30 of 30 pallets of strawberries today because they'll go out of date. That's where I feel I am now and that's just twelve months Matt. Each year I think I've honed my skills a little bit more. I've become more comfortable with what three levels of progress meant, I became more comfortable what nationally we're measured against and that comes with time and experience."

Teachers become those tasked with delivering progress for and with young people. This project is something that, as I suggested earlier, requires skill, but also knowledge in the honing of professional judgment. This is experienced as operating with the market logic of timely action to achieve the results required. While one mode of this is dehumanising – the pupils are 'pallets of strawberries' – as I will argue later, there are countervailing discourses, particularly around care (see also Watkins on tears in the classroom, 2011), which operate with very different logics. Delivering progress in schools, or rather producing it, has come to be dependent on the emerging everyday practices of making and using of particular forms of data. This has run alongside the reshaping of the roles, competences, knowledge-curricula and governance of education spaces.

Progress, it can be noted, has more typically been understood as a story about time associated with modernity. The story assumes that there is a universal linear trajectory to history where onwards is upwards (Finn and McEwan, 2015). Progress is read as varying spatially and as originating in certain places (and with certain people) and moving beyond these bounds being shared through the spreading goodness of civilising missions. Where the story resonated with stagist evolutionary theories of human development (and child development [Finn and McEwan, 2015]), it figured strongly in colonial (and neo-colonial) imaginaries and has been strongly critiqued (Chakrabarty, 2000). Progress as good change is held, in this view, to predominate

through the spread of ideas which bear the burden of European thought. For Chakrabarty (2000: 4), these include “citizenship, the state, civil society, public sphere, human rights, equality before the law, the individual, distinctions between public and private, the idea of the subject, democracy, popular sovereignty, social justice, scientific rationality”. Progress has therefore been thought of as ideology, discourse and logic – as a mode of thought. I argue that this occludes the possibility of an affective dimension of progress where pupils visibly demonstrate and also describe making progress as feeling good. Yet, the conditions under which these atmospheres of progress can be made and sustained are volatile. Stabilising the turbulence and fragility of these atmospheres which enrol data in the production of collective and individualising feelings of progress therefore becomes a critical act by staff and sometimes pupils themselves.

Maintaining an atmosphere of progress

While the level of specification offered in curricula and the confidence with which teachers ‘level’ work by pupils could lead one to see these progress data as settled, solid and static, that would be a mistake. There is fragility to the conditions by which the school may be produced as a place of collective progress – both for pupils and for ‘the government’ or Ofsted – and teachers are highly sensitive to this volatility with their reputation as a school and ability to position pupils for the future at stake. Some of the volatility is related to ‘external conditions’ over which the actors in the school have little control. For example, in the summer of 2013 a controversy emerged around changes made (after the examinations had been taken) to the grade boundaries of GCSE exams, particularly in GCSE English. The purpose was to ensure their ‘rigour’ and one news article headline read, *“Head teachers say thousands of pupils could miss out on expected GCSE grades because of “significant turbulence” in this year’s results.”* (Richardson – BBC News, 2013). Brian Lightman (BBC News, 2013), the head of the Association of School and College Leaders, called for ‘some stability’. Had the pupils’ answers changed between submission and marking? No. Concerns about grade inflation and the direction to intervene on the basis of stabilising confidence offer similar atmospheric discourses as those of financial markets (McCormack, 2012). The

data operated in this example with a polyvalent quality in that they can admit multiple signs – both results rising under the Labour government and results decreasing or staying static under the Coalition government are heralded by their respective parties as signs of progress. However, these changes to grade boundaries bring to wider awareness the performed and performative nature of pupil attainment and progress data. It temporarily denaturalises the conditions of possibility which allow judgments to be made and suggest, if only briefly, that they could have been made otherwise.

School leaders are conscious that they have to predict, plan for and where possible pre-empt these volatilities. One of the Deputy Heads of the school said:

“So they’re only just telling us now how exactly they’re going to measure our performance in 2014. Now the kids who leave in 2014 started their options in 2011. So they’re well down, there’s very little we can do. So you’re trying to second guess what the government is going to do, you’re trying to meet the requirements that they are going to impose on you as well. . . . You’ve got to be continuous reading what the politicians are saying and what they’re obviously pointing at and try and adapt but you’ve got to put the kids first.”

Staff find themselves increasingly in a position where they feel obligated to serve the data (and the school’s reputation) in ways that could worsen pupil outcomes in the longer term and yet still try to act in what they understand to be the best interests of the young people. Yet, what maintains the school as a place seen to be making ‘the right kind’ of progress for state accountability structures is something that may not maintain for pupils a collective sense of progress-making. This requires a certain kind of attunement to the moods of politicians concerning the direction of change. Sometimes the priorities align, but at other times they diverge, as a head of department at the school reflects:

“At the end of the day it’s that balancing act of actually the data’s the data and Ofsted are Ofsted but there’s a child in this and what’s best for the child isn’t sometimes best for the data. So [child’s name] is a classic example where I’ve made a call where he

comes first, not my data. And it's tough and you can see I'm taking a hit there of 1 but I think it's manageable and I think he comes first."

The situation is presented as something to manage that requires decision-making and involves conflicts of interest. Here, what serves the data (and by extension the priorities of Ofsted) is not that which best serves the interests of the child. To protect the child from the further expectations of government in terms of the progress the child will make is what (counter-intuitively) the teacher believes is necessary to maintain a sense of existing progress that keeps the child engaged in education. This is contentious and various adult actors disagree about what it means for the 'child to come first' or for the child's best interests to be served. Of course, the possibility is raised of what happens when the 'hit' becomes unmanageable. It is suggestive that a point may come at which the protective agenda of the teacher – in which the demand for expected data is no longer deemed reasonable, or in the child's best interest – becomes untenable in the face of the call to produce the required data.

Given these potential conflicts of interest, I was surprised then that in all the time I spent in lessons and in many of the interviews, the data were not often overtly contested. By contrast there was a sense, as in the introductory vignette, of positivity. "I'm going to push you into C grade for the last four questions – so give it a go" I hear from a Maths teacher. The teacher continues that this Year 10 'lower ability' class is a whole year ahead of some of the year 11s and he's going to keep pushing them so they can get the best grades possible. The pupils are calm and focused and there is an enveloping sense of shared positive feeling. In this teacher's Maths class there is constant sense of movement and lots of explicit progress talk. Indeed, in interviews, pupils talk about this teacher very positively. However, there were a few moments I observed when the attempts to maintain and hold stable an atmosphere of progress in relation to school data were less effective. One took place in an English lesson:

The foundation ('lower ability') English class has completed a two part task with the pupils and they are now peer-marking. She tells them to compare their marks this week with when they did the task last week, many had gone from 3 out of 7 to 6 or 7 out of

7. She drew attention to this and gave praise as to the progress they had made. But one pupil calls out that they couldn't have got more than three last time because they were only told and given instruction on how to do the first part whereas this time they had done both parts.

(From ethnographic notes)

The teacher has understood that she must generate a sense that progress is being made, with the pupils and/or for the approval of a school inspector. However, she does so less artfully than other staff and in a way that the pupil perceives to be based on an unfair comparison. The lesson felt 'flat' after that moment, pupils were listless, bodies low in the chairs and with little eye contact with the teacher or each other. By contrast, most teachers consistently (and more effectively⁴) worked to manage these individual and collective affects around these encounters with data. In a year 7 geography lesson, assessments were returned and a sense of dismay passed between pupils. Eyes widened and some shock was registering. The collective feeling had moved from anticipation of the results to a 'loss of heart' and the possibility of protest from some who had been used to higher marks in primary school. The geography teacher quickly interjects when he perceives a shared sense of dejection:

"Don't get disheartened as there are 4 years [to go] but you're in the first term of year 7. You're not expected to be there yet. Mozart & Einstein probably wouldn't get their target grades yet."

Irrespective of what Mozart and Einstein might have achieved if only they had been able to benefit from these year 7s' target grades, teachers sense the need to maintain circulations of confidence to keep young people enrolled in the process of data creation which would allow for progress to be made and felt as having been made. The threat to an atmosphere of progress in which pupils feel themselves to be 'on track' was dealt with promptly by the teacher. This occurrence was neither a set of

⁴ While it goes beyond the scope of this chapter to explore how the capacities to read and respond to the individual and collective affective life of pupils are learnt and habituated, a body of 'how to' and academically informed literature has been developed in education regarding this most commonly under the term 'behaviour management'. See, for example, the work of Bill Rogers (2011) and Sue Cowley (2010).

individuals having entirely separate emotional responses at the same time nor an example of a school's pervasive ethos at work, but a particular response to a collective sense that individualised pupils and yet was also collectively experienced, interpreted and responded to by the teacher. The sense of it 'in the air', as potentially eruptive and certainly as enveloping me, as someone who hadn't taken the test, was palpable. The shared sense of progress-making and individual and collective good feeling that accompanies this is reliant on data and the associated technical and emotional judgment and management of staff. And, as I have suggested, not all members of staff are equally effective in maintaining an atmosphere of progress. The agency of data is not pre-determined but highly contingent and its effects dependent on the means by which data are interpreted. I continue to explore this theme in the final section where I specifically consider pupils' experiences of progress data through their language of 'push'. I move from considering atmospheres of progress specifically to some of the affective relations that emerge in association with these atmospheres.

Progress and push

Dave is in his final year of this school. He likes to help people and he says that is why he volunteered to be interviewed. He is proud of his home town. Despite this, Dave has been in trouble and nearly removed from the school to alternative education. He is feeling more positive about school, but it has been difficult for him to work out, in his words, 'Who's who and what's what'. He finds himself having made only two levels of progress in English since the end of primary school, compared with the three levels that are the nationally set expectation and the four levels expectation within the school. It is important to note that the expected distribution is not the Gaussian normal curve with which educationalists are familiar. The normalisation function is operating differently. Here, all pupils are expected to make the same minimum number of levels of progress (three) or more, irrespective of their starting point.

These data are put on display and have a material presence in lessons on electronic whiteboards, in exercise books, report cards and here in the corridors (Figure 14), in this case by the canteen where pupils queue for lunch. The figure shows a set of concentric circles each representing levels of progress (from 1 to 6). Each year 11

pupil's name is placed in the circle of their respective number of levels of progress as in October 2012. In contrast to the accounts which emphasise the constant circulation and fluidity of data (Lawn and Ozga, 2009; Kitchin, 2014a), where data are not updated (the board in Figure 14 was unchanged when I returned at the end of the school year) and remain 'sticky' they too will have an effect. Where they are unchanging and unresponsive – fundamentally where they are seen as untimely - as with Nicki in the previous chapter, they do not have the buoyant or fluid quality so often attributed to contemporary data.



Figure 14: WUU2 boards – What (are) you up to?

This practice of displaying data is rendered normal in part because of the peer marking I mentioned above; many pupils know each other's levels already. To add another dimension to this display, I would like to suggest Dave not only finds himself over a line

but outside of the affective sphere of adequate progress (Figure 15). He has made progress but not enough. He is in another sphere in which the outer ring contains the word 'Danger' repeated several times alongside images in the outer two rings of a skull and crossbones. What is signified? This sphere is one of danger, of threat and being subject to interventions to try and get him back on track. And what is meant to be at risk here? Is this the death of progress, life chances, aspiration?

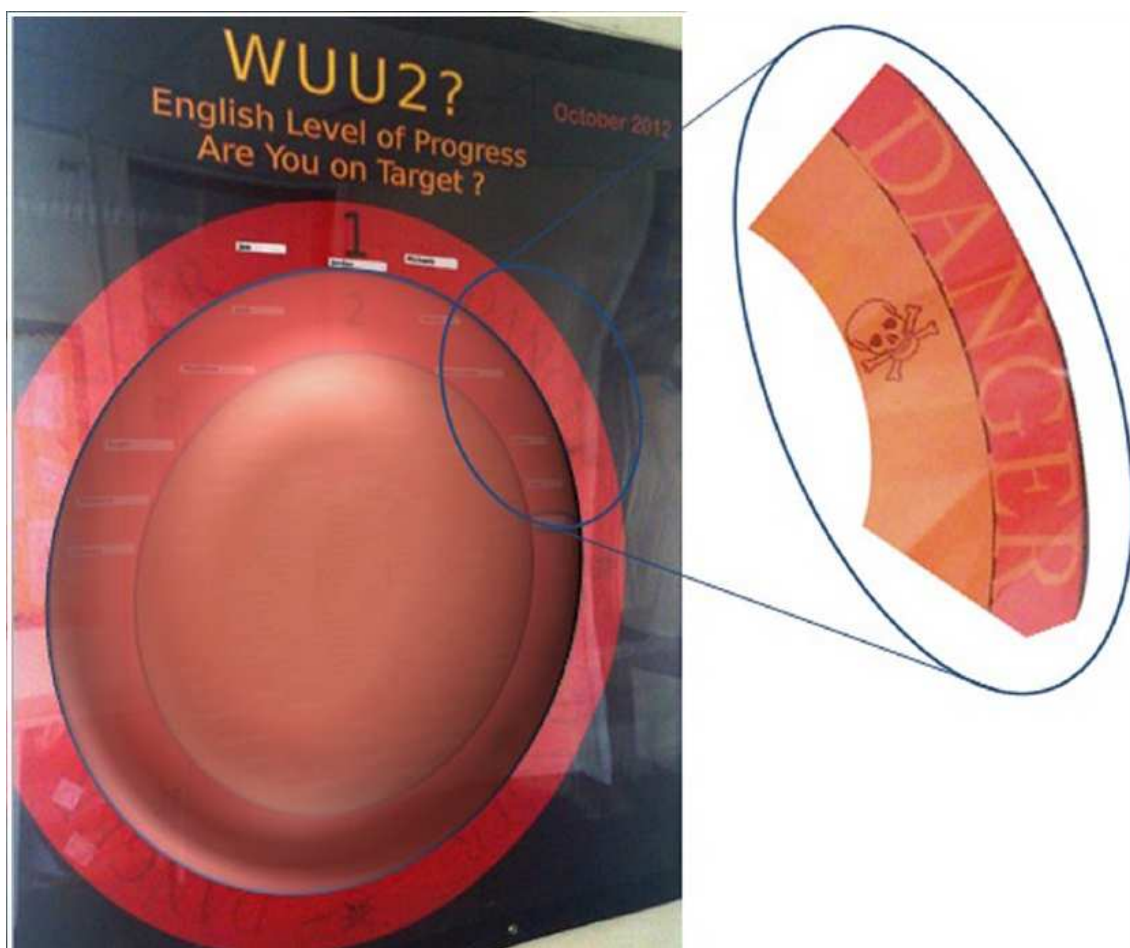


Figure 15: Danger! Threat! Outside the sphere

Dave is positioned differently on different boards, but when I ask him about them, he displays resignation about his positioning by them:

"I'm not bothered what people think about me, to be fair and whatever I've got, that what I've got. Fair enough. At that target thing, it's just to show who's the brainiest and who's not I reckon. I'm not a big fan of it because I'm always at that end instead

that end (he indicates with his hand in the air an outer circle, the edge, rather than near the middle)."

I ask him why he thinks that the teachers use these boards:

"Just to show people where they're at so they know if they need to stick in more or they can relax a bit and that's why I think, I'm not sure. I could never understand the school's logic."

For Dave, along with many other working class lads (Willis, 1981; Lareau and Weininger, 2003; Lareau, 1987; Lareau and Horvat, 1999; DiMaggio, 1982), the school is a confusing place, operating with a logic that is other to himself. The boards simultaneously depict the binary (dis)abilities of pupils – whether they are either brainy or not but also the effort a pupil is expected to expend. The data speak to him of the disposition he may adopt as to whether more or (even) less effort is going to be asked of him. Maintaining engagement and making sure that the data will result in motivation requires significant labour, and being outside this affective sphere renders one subject to intervention. This is a place where staff work to try and pass on and re-mobilise feelings of confidence, and through aspiration discourses, hope, the lack of which, is meant to be part of the problem (Brown, 2011, 2013; Holloway et al., 2011; Holloway and Pimlott-Wilson, 2011). This kind of intervention is quite consciously done and its performative effects well known to staff. The head teacher reflects,

"I like data, so I'm all for it and it's served us well here as a tool to motivate pupils, and staff and the school but when the data is going well it is an uplifting thing. That's why most people are happy for it to be public in this school because the data is very positive data and that has a cumulative effect over the years. When the data starts to slide, as it will under Mr Gove's new ideas,⁵ for a school like this it will. His idea of curriculum, of what children study, is not appropriate for many of our pupils at all and they will

⁵ Michael Gove, the UK minister for the Department of Education at the time of research, brought in changes which could be characterised as a return to a focus on 'traditional' subjects, an increased focus on facts in relation to skills and a return to terminal rather than modular examinations.

underachieve because they can't achieve what he's expecting them to. That would be a different thing and the data will become an issue again."

Data are seen as having the affective quality of buoyancy (for many though clearly not all), as 'uplifting', but this quality is contingent on the policy decisions which effect schools differently because of the relationship between a school, local people and post-mining landscape and the nature of the curriculum and the classed values and knowledges assumed to be of import. The WUU2 board in Figure 14 is a source of pride for the head teacher because it shows that the majority of pupils were making greater than expected progress and many have made exceptional levels of progress. The use of data here is strategic but ambivalent. I asked her if using data publicly in this way were to be more demotivating for more pupils whether it was something they would reconsider. The head acknowledges, 'Yes the WUU2 boards would go'. The data which are in part constitutive of atmospheres of progress could in the future undermine the atmosphere the head is seeking to maintain. It is a contingent practice.

All these data do not only have material presence through the school but are also made present in language. One of the ways that the changing role data plays in maintaining these atmospheres is reflected and reproduced through 'data-talk' both from teachers and pupils. The head teacher again reflects,

"So about three or four years ago we noticed a difference in the kids. When you listened to their conversations, and as a teacher you can't help but do that, the conversations had changed. They were much more about what they were targeted and I'm going to get, I'm working towards a C, I think I might be able to get a B in that. I need 5 grade As to get into wherever. I know my deputy who'd been here a long, long time, to her it was a tangible difference in the children thinking about what they were forecast, what they were targeted for, what they needed to get. That had never happened in all the time here. I don't think that's unique to here . . . the data drive from Ofsted and government has made it happen."

This comes through in the language used by pupils in interviews. Although teachers, in the main, talked about progress, almost all of the pupils talked unprompted about

'push'. So when talking about the technique of 'aspirational targets', Dave feels something different:

"It's nice to see they've given, like, that's what you should be aiming for, so like try and get this. It does give you more, uh, . . . what's the word, . . . motivation, to get that but to get that level. Instead of just sitting back, oh, cos if they give you, like, a low level you just think, what's the point, no point in doing this?"

While Dave might be outside the sphere of adequate progress and so doesn't share in the good feeling of his peers, when it comes to targets, as judgments of what Dave could achieve, a different set of feelings is called forth. I ask, 'Are there any times when you think it's not been a motivation?'

"Personally, not really because I always like, I always try to push, see what I can actually do."

And although he thinks that there are more upsides than downsides to targets like these,

"there is some downsides when you just like cannot be bothered and you're like, just they're pushin' you, pushin' you and you're just like, "I cannot". You cannot keep up and that and you're just tired, but you get over it".

An atmosphere of progress then, as described by pupils, is one of push, of movement, through pushing yourself and through others pushing you. It also draws in senses of motivation, achievement, pride, despair, boredom and tiredness. Dave articulates this in terms of making a decision of the will in sitting back, in feeling the emotion of not being bothered and in an inability to 'keep up' with the pace of learning. Although others expressed a similar confusion and surprise to Dave about the logic of the school in the setting of targets and whether they are achievable, I should stress that when most of the pupils interviewed spoke about 'push', they did so in a positive way.

For Jeff, also 16, accepting this use of data and the concomitant 'push' is justified by the outcome and the future freedom it offers. While now you have to do particular things 'then you can just do what you want':

"I'd say that [the school] does help yuh, cos it does push yuh to get the best grade you can so then when you come to the decision to go to college or to sixth form or apprenticeship or whatever, then you can make that decision freely. So you got the grade you needed and then you can just do what you want."

The nature of the help the school offers is the push the pupils experience to achieve to their potential. Whatever the future (here a broader range of learning futures are mentioned), the choice is enabled by the achievement of the grades and the push that effects this. Current freedom is limited so that future choice is maximised and the widest array of desired futures is achievable. For Elena, the data allowed her access to a slightly different kind of movement and push:

"Yeah because, like, they'll notice if you're doing well . . . The new teacher realised how well I was doing and how easy I found the work and I actually got pushed up to a higher class, so I wasn't just sitting there doing easy work. I can actually now do harder work to challenge myself."

Her data had changed sufficiently that she was now not being able to make progress with the level of work available in her class and so got 'pushed' up to a different set. She experiences educational movement in contrast to the stationary who are left 'just sitting there' outside the sphere of progress as effortful movement. She feels positive that her achievement is recognised and her journey of progress can continue. For Elena, the WUU2 boards do inspire this 'push':

"You can sort of push yourself further because you know what you actually need. So if you try and push yourself harder then you can actually reach a higher grade than you could be expected."

The boards communicate to her what is needed and she has found that she can – with push – exceed what is expected of her. Yet, as in the previous chapter the agency and account of who does the achieving shifts. Her friend Nicki continues:

*"It's best for us in English because our teacher helps us to push ourselves... she was already getting us As and A*s so she really helped us."*

I ask how the teacher did this and Nicki continues:

“She pushes us hard to work doesn’t she but it doesn’t feel as if you’ve got too much to do”

As before the pupil attributes the ‘getting’ of the grades to the teacher and yet it is clear that the push from teacher, in Nicki and Elena’s mind helps them push themselves. They act together to maintain the felt sense of progress where a ‘hard pushing’ doesn’t result, in this class at least, in a sense of being rushed or overloaded. Elena chimes in:

“So it feels like, ya sorta like, it comes out easy but she’s actually pushing us to be able to get higher levels.”

This push is enabling and through the circulation of feeling the ‘it’, the product of learning, comes out from the pupil enabling the achievement of levels higher even than had been expected. The expected learning future is exceeded to the positive feeling of all.

However positive this is for Elena and Nicki, pupils experience this push differently and to different extents in their various subjects. In the same interview, Nicki is at another point much less positive. She achieved high Scholastic Assessment Test (SAT) levels for science at primary school but because of the pathway she was placed on, she is being asked to ‘bank’ a Business and Technology Education Council (BTEC) science qualification. Indeed this is one of the challenges of pathways as a timetable based on a set of subjects being studied. As a ‘package’, some pupils find certain elements too easy or too hard based on their particular sense of competence in that subject. Having ‘banked’ the BTEC science qualification, Nicki will then go on to spend a year studying GCSE science which ‘because we haven’t had no practice at exams it’s going to be twice as hard for us’. Nicki’s critique is of a BTEC which isn’t ‘worth as much as GCSE’ and is ‘not challenging at all. It’s easy’. She feels, on the basis of her previous grades, it is unjust that she is insufficiently pushed relative to their peers – that her ‘educational movement’ is not requiring her effort. Nicki is held outside of the spheres which would

allow her to feel that she too is able to make the kind of progress she would like based on the credentialing data that is most valued in the English education system.

To be an object of the attention of teachers may be unwelcome, but for some, not to come to the attention of teachers and not be subject to intervention is worse – it is to believe that the school isn't interested in your progress. And this is not without warrant for the tactical approaches some teachers take do imply uneven geographies of push (and attention).

In one of the CPD sessions about data use, one member of staff describes looking at those at the boundaries of grades or levels. She asks, 'Is the child on a D+, in which case it's 'worth investing the time', or a D-?' Furthermore, 'if there are lots of D+ who are you going to give the time to?' Importantly, this is not just focused at the C/D borderline. Another example was given of a pupil who was making three, four or even five levels of progress in all of her other classes but only two levels of progress in one subject, and the teacher says, 'I know I've got to invest time in her'. In this new regime, it is *not* those who are furthest from a 'passing C' grade who are given less attention but those who are furthest from *any* next level of progress. Previously, the limited attention of a teacher might have been strategically focused on those at the C/D borderline to 'get pupils up to' what is considered a pass who count towards the school's A*-C measure for league tables (Ball et al., 2012). Those above weren't pushed and those below were written off in this story and received less attention. With the introduction of progress data, the school becomes accountable for pupils making progress across the 'ability range'. However, the 'push' is still given unevenly. The atmospheres of progress are maintained through data and visualisations of that data to try and promote general effects for all pupils. However, there is unevenness to the intensity of the techniques used to (re)mobilise these atmospheres around particular pupils and at different times.

Some pupils argued, in fact, that the unevenness could be addressed, and the intensity of atmospheres maintained through data could be increased. They advocated an increase in the amount of data they had access to or the frequency with which it was

produced. Continuing with Nicki and Elena, in relation to Nicki's feelings that some of her targets were too high I asked if there was anything a pupil could do about that:

Nicki: I could talk to the teacher but I doubt they would change it because it's their opinion not ours.

Elena: It's sort of like a guide for them.

Matt: Is it more like for them or for you?

Elena: It's more for them because they're the ones who have it but we don't really find out much about it. We normally just get it once a term we'll get one of these and we'll get a new sticker to go in our book and stuff so we don't really find out as much so we should be able to get some every half term so then we can see how much we've progressed in each half term.

Again, there is a complexity in these responses as earlier Elena is positive about the effect the visibility of progress data and the related targets have on her motivation. Yet later in the interview, in support of Nicki, she feels the targets are for the teachers – they tell them what must be achieved. Only later and only in a reduced form do these data filter through to their stickers to record in their books. For Nicki, the targets become unchallengeable not because of their objectivity but because they are the opinion of the teachers. This suggests that in this case, and as with the science course, the data becomes a point of contestation which exposes her lack of control over her ability to make decisions about her education future. Rather than something which is negotiated it is something that is fixed and out of her control. For Elena, an increase in the frequency with which data are shared would enable a still better maintenance of a sense of progress because it is made real through being seen.

For Amy, access to more data would also be useful. In the interview she was able to review her attendance data but is skeptical that a pupil could ask for this data:

Amy: (...) It's interesting, like (...)

Matt: What do you think is interesting about it?

Amy: Well I've missed (...) Just to see how many days I've missed because it's not something we ever get given. And I think if we asked for it they would look at us as if we were funny. It's not something I've seen before.

Matt: Is it something that you'd want to have?

Amy: I think it would be useful to be given it. If people looked at it and seen, I could have been at school 179 session but I missed [number] I think they would think, aw, well I could have made up a few more marks if I'd been in then. I think it would help people come to school more. Like motivate them. (...) but it is useful.

Amy reasons that access to this kind of information would help motivate people to attend school and makes a direct link between attendance and marks in assessments. For Amy, this encounter with her data caused reflection and, perhaps because I did not have the power to shame or punish her through the mechanisms of the school, provided her the space to reflect on the data made about her and what this meant. I think that for some pupils Amy's reasoning holds true but for others, particularly in the context of illness, or in which pupils were given a perverse incentive to compete with others for the most sessions missed, I would be concerned that making the data public would have an adverse effect. Nevertheless, both instances suggest a lack of control over the accuracy, availability, timeliness and frequency of data and uncertainty that talking with teachers about this would be well received.

Conclusions

In this chapter I have drawn attention to profound changes to cultures of education that are evinced in relation to contemporary proliferations of data. I have argued that state schools in England are seeing a shift from a focus on absolute achievement to progress and from a focus on improving teaching to evidencing effective learning. Not all of these schools appear to give (as yet) the same priority to progress. Ball et al., (2012) and Selwyn et al., (2015) suggest a mixed picture of multiple foci. Yet, where these shifts are taking place (with 'push' from government and Ofsted imperatives) along with the embedding of digital technology into the classroom, a proliferation of data has been the result. This has profound implications for geographies of education

and cultural geographies, especially those that consider the relationship between culture and education (and cultures of education). Digital forms of mediation and the experiences of data-based living are not simply layers that can be added on to existing accounts of cultural life. In the data-based school, the curricula, the modes of assessment and teachers' and pupils' roles are being significantly reshaped to enable evidence-based learning and account giving. The teacher becomes less a transmitter of information but a data producer and analyst who enrolls the child as the same – as a social scientist of their own learning ability, achievements and life trajectory. In the school as 'data factory' or perhaps better 'data centre', the ability to create and maintain, through this data, atmospheres of progress has become critical to producing the successfully schooled subject.

Although grades have long been used to classify and sort, to motivate and shame (Rowntree, 1987; Lawn, 2013), this chapter has argued that the contemporary data-based school enrolls young people in projects of education through the creation and maintenance of collective and individualising affective atmospheres of progress. I have sought to contribute to theorisations of affective atmospheres in geography and how they come to be known (as a question of both experience and method). These atmospheres are not spontaneous ephemera but draw on data's significant material presences in the school and the lived experiences of the persons who may find themselves contributing to or disrupting such atmospheres. The data are used strategically but are ambivalent and work is done, although not always successfully, to make data work for the motivation of pupils as maintaining the circulation of feelings of progress. These interpersonal sensibilities remain fragile and contested. This should caution claims that data are 'doing' any one thing only in schools (such as dehumanising pupils and teachers). As contingent and contested, the life of data in enabling data-based living is polyvalent and ambivalent.

This chapter has also advanced a novel theorisation of progress 'after the affective turn', which is to say that the progress described here is not sufficiently understood as developmental fact, logic, ideology or discourse, but as felt. Pupils experience these atmospheres of progress, and the encounters with data which support them, in

varying ways, only some of which have been explored here. Some express confusion, dejection, motivation, surprise, excitement, shame, nervousness and happiness. Many use the language of 'push' to express the double move of being pushed and pushing oneself. It is a language not necessarily of violence but certainly of exertion; this is atmospheres of progress as 'pockets' of shared senses of effortful movement and improvement that result in individual and collective good feeling. While some like Dave feel that this can result in people being pushed beyond their ability, others like Nicki try to use prior data to challenge what they experience as educational injustice. To experience a lack of attention and challenge can be to feel abandoned by the school to your own efforts in an uneven geography of 'push'. Exploring the affective dimensions of progress allows for the extension of the understanding and critique of the nature of 'projects of progress' more broadly. It also suggests why such developmentalist critiques may gain little traction, even among those who labour fitfully to produce 'progress', where a majority are enveloped in the positive feelings that can arise in such atmospheres of progress.

Finally, I offered a couple of examples of where pupils suggested that an increase in the amount and frequency of data would be beneficial. In both instances uncertainty was expressed that requests for changes in data or negotiation around them would be positively received. Where there are contestations over futures through data and shifting agencies how could such situations be negotiated? Can a child be allowed to make decisions about their education, data and future, particularly where those decisions are held likely to have implications for their 'life chances' and the future of teachers and the school? That there are tensions over what constitutes the 'best interests' of the child complicates this further, especially if the demand for data creates an apparent conflict of interest between the child, their data and the expectations placed on the school. So, the question I am left with is: what does it mean to care in the context of data? What does it mean for a teacher to enact an ethic of care for a pupil, indeed a 'pupil multiple'? What too is it for pupils to care for their data selves when doing so is also to be asked to care for their teacher's futures? This is the

question I take up in the next chapter as I conclude, highlight the contributions of the thesis and offer reflections about future directions.

Chapter 7 | Conclusions: taking care with education, data and futurity

A proliferation of data has been the subject of professional comment and emerging academic research and critique, however there has been little work which goes beyond the programmatic aims of policy and the macro-scale and a striking inattention to pupils' experiences. This thesis is presented as, to my knowledge, the first deeply-textured account of the life of data and data-based living in a school, which – based on ethnographic study and hearing from pupils themselves – seeks to understand how the proliferation of data is negotiated in detail, in place and in practice. In this chapter I offer the conclusions of this research before taking up the question of what it might mean to care in the context of data. I introduce new material from the school to do so as pupils and teachers are already involved in the ethical and political reasoning about the profusion of data in schools and use this as a basis for making a set of proposals that arise from the project. I then move to highlight the main contributions of the thesis before finishing with a reflection on possible future directions for research.

Conclusions

The proliferation of data in schools has been simultaneously lauded as transformative and castigated as tyrannical but the findings and arguments presented here have shown why this binary is ultimately unhelpful. While data do become a point of contestation and a source of shame and anger for some, for many the data are used to create and sustain positive sensibilities as an 'atmosphere of progress'. Further, the dynamic play of shifting agencies seen in the school means that pupils, teachers and data are all figured, at points, as active subjects and at other points objectified. These multiple experiences and the ambiguous agency of data themselves mean that more modest claims need to be made about the potential and pitfalls of data.

The main contention of the thesis, explored across the empirical chapters, is that data work to bundle and bind. Data bundle together different spaces and times as 'the school', knowable in the present, comparable with recorded 'pasts' and enabling the imagining and realising of futures. This bundling renders diverse spaces and times as knowable and amenable to judgment, decision and intervention. The demand for data

and the circulation of the data produced and analysed extend the spaces tied together and lines of influence as part of the data assemblage to parents, governments and companies.

Data also act to bind people and their futures together where demands are made for the production of expected data. Through the production of these data pupils and teachers become co-responsible for securing each other's futures and so also the future of the school and the nation. The data bind together those who set such expectations, those labouring to achieve them and those evaluating whether this has taken place. Not that these roles are separable to government, pupils and teacher-examiners respectively. There is a bundling of roles wherein the shifting grammar of agency all are thus enrolled and teacher and pupil effort, ability and desire align to produce an educable subject whose learning can be enumerated and so evidenced. The 'pupil multiple' is produced and their digital personae circulated with many sources of data assembled, sorted and sifted. The successful 'pupil multiple' exists with a coherence of composite data traces from different tests, across different lessons, between different schools and where the expected is being achieved. There is coherence of body and bytes, places and times, and between different sources of data.

Implicit in such data are ideas about the future, but data are also asked to act as a means of, through sustaining a sense of progress, ensuring pupil and teacher engagement so that those futures can be achieved. However, these bundling and binding effects are contingent and require ongoing labour to maintain this sense of coherence. Divergences occur where different ideas of the future are desired than those implied by the expected data and this brings pupils and teachers into conflict. There are further misalignments where pupil data are not believed to be accurate or achievable, are felt to be discordant with an imagined or desired future self, or where multiple data traces are thought to be incompatible. Where one remains inside the 'atmosphere of progress', data provides 'evidence' of effortful movement and mastery achieved through pushing oneself and being pushed. Outside the 'sphere and in relation to divergences and misalignments, interventions are performed to remobilise and re-enrol young people in the task of evidencing learning.

It is reasonable, urgent even, to ask, 'What do the changes that I have been writing about here mean?' Although I have given some attention to the ethics and politics of such changes it is also necessary to ask what kind of ethics and politics might be needed to live well in a time of data. As I have described, one of the ways in which teachers have thought about these changes is in terms of social justice – about ensuring the pupils get what they deserve in the knowledge that curricula and forms of testing are culturally specific and could disadvantage their (culturally marginalised) pupils. Another way in which teachers thought about this, which I took up in my interview questions, was through the language of care. What then might it mean to care in the context of data?

Care in a time of data

If a diagnosis is made that governing by numbers is a tyranny but a largely hidden one, then the prescription is a politics of making visible so that the data be seen (for what they are – technologies of power) and resisted (Ball, 2015; Selwyn, 2014). The deluge of data must itself be swept away; the monstrous creations of digital personae must be put down, and the assemblages that give rise to them broken apart. Yet, how to make sense of the calls from some pupils for more data? What of those for whom data challenge 'deficit narratives' and allow them to reformulate ideas of themselves as more capable than they or others had believed? What of the occasions for friendship and relations of care through shared engagement with data? Are these pupils and their teachers dupes, naïve, misled, making the best of a bad situation, addicts blinded to their unhealthy dependence on data for a sense of self? Is the good feeling generated and which circulates in relation their progress data like the person who smiles as they tuck into a bowl of arsenic ice cream?

Certainly, the situation is more multifaceted than I think Ball (2015) and Selwyn (2014) allow for in their critiques. Their view is based, in part, on a reading of Foucault in which power is understood as totalising, dominant and oppressive. In drawing on the work of Gallagher (2004, 2008a, 2008b), Philo (2011, 2012) and Kesby (2005, 2007) and their readings of 'late Foucault' there is another story of power: not one of only domination/resistance but of power as creative as well as regulatory. In this story

subjectification is enabling and empowering, even as much as it is oppressive – it is docility-utility, and docility is not the same as passivity. Indeed, based on the interviews with pupils and teachers, it is important to pay attention to the stories of what data enable and *under what conditions* they come to be experienced as oppressive. This is not to paint a rosy picture, I trust, but one which takes seriously that no pupil or teacher was wholly or, for many, even mostly negative about their experiences of and encounters with data. I think academics risk paternalism at best if we assume we know better or see more critically than those who have first-hand experience of the life of data or data-based living in schools: their critiques, where expressed, are trenchant but they are only part of the story they tell. This is not simply taking what respondents said at ‘face value’; there are contradictions, confusions and partialities in what people said. However, there is a need to be attentive to the multiple experiences of data that mean they cannot be characterised as either only a tyranny to be resisted or transformative and to be embraced wholeheartedly.

The proliferation of data, evoked in the metaphors of data as torrent, flood and deluge, present the quantity and movement of data as the most pertinent features of these times. Though there has been a proliferation of data in the school, in practical terms data are decidedly not omnipresent or always moving. And, depending on your view of things in the school, one is as likely to consider data scarce as copious (Kitchen, 2014: 149ff) and this is why a pupil might ask for more. This is true both geographically – that there is an uneven geography to data production, analysis, circulation and encounter – and it is true that of the vast quantities of data produced they still represent a partial selection of all that could be (and have been) recorded, measured or known. This matters when the production and use of data ‘teaches’ what or whom is valued; I do not intend to be trite in noting that there is no GCSE in friendship or data produced evaluating the care that pupils express for their parents or siblings⁶. Yet, for many of the pupils in the interviews, family and relationships were very important sources of meaning that had little or no apparent value in the logic of the school and in

⁶ Though ‘young carers’ is a category about which data are kept because of the common effects on the young person’s educational achievement.

data production. Having spaces beyond the surveillance of the home or school - in which what you say is consistently evaluated, recorded and used - was important for Amy. For her it meant time with her horse:

"You can feel a connection between yourself and the horse, and it's like (.) my horse is called Princess and, like, I'm the only person that talks to her. It's like, I think it's important to have (.) almost a relationship between the two and it's nice to just go and spend time not by yourself but without someone talking to you, but you can still talk to them and they're not going to tell anybody anything so you can tell them as much as you like."

The freedom to talk without judgment and to learn without measurement should not be overlooked and yet teachers and pupils do narrate data as enabling of learning and the ability to offer an account of their action. It is for this reason that I am not a 'data abolitionist'; I think that even if there were no requirements to produce data, teachers would still do so because it allows them a means of reflecting on and evaluating their practice with the aim of improving it. The data regime in which progress measures operated arguably engendered one kind of improvement. Though still operating in a strategic manner, a teacher's efforts and attention are spread across a much wider range of pupils than under a system in which getting pupils over the C/D borderline was the focus. But, I think, to talk of care is to talk of more than improvements, effectiveness or efficiency.

Tronto, (1993: 127-134 in Williams, 2001: 477) suggests that an ethic of care involves the four-fold dispositions of:

- *"Attentiveness - caring about, that is, noticing the needs of others in the first place*
- *Responsibility - taking care of, and through that assuming responsibility to care*
- *Competence - care-giving and the activity of caring involved in this;*
- *Responsiveness - care-receiving, which involves an awareness of one's own vulnerabilities as well as an appreciation of the different positionings of the care giver and care receiver"*

In this way care has multiple dimensions and is socio-spatially produced. Work by disability activists further emphasised the relations of power involved in caring relations and as such where 'care' could be a means of enacting (and justifying) domination (Williams, 2001). So to ask what it means to care necessitates a cautiousness about the ways in which being cared for may be experienced as unwelcome by the recipients when it is not invited or desired. It also means that the roles of care-giver and recipient are not mutually-exclusive and the movement between different roles at different times and in different spaces is important. I sought to explore this with pupils in the interviews by asking them to imagine a line with 'the school cares for me' at one end and 'the school cares for its reputation' at the other end and asked them where they thought the school should be placed. Some said one end, some said the other but several deconstructed the way in which I presented the question. I knew that it was a false dichotomy but was interested to see how the pupils would reflect on its presentation.

For Dave (Y11, male, Chapter 6), 'kids' who are and feel cared for, will in turn be those that keep the reputation of the school high through producing the expected data. His experience of intervention is not interpreted as personal care but as care for maintaining the reputation of this school:

"They're like proud of their school and they think they're the best. They just want to keep their reputation high. ... What's the point in trying for them when they're not going to be dingin' (?) for you. All they care about is their reputation and so if you stick with the reputation people are not going to try, and sabotage that and try and get your rep down. So if you go and help, see the kids and care about the kids, they're going keep your reputation up cos you're caring about them, but the school is the other way around. You have got quite a few people where [they say], 'nah, not a good school'."

As was seen in the previous chapter, for Dave there is a sense of separation between his digital data-based self and his embodied self because he finds himself unable to achieve that which is expected of him. Dave's inability to cohere with the expectations expressed by data and his current data personae runs with a perception that his effort

would not be for his own benefit but for the school's ('trying for them'), and that the school cares about their reputation data and not him. Prioritising the school's reputation may diminish effort (for schoolwork) and concurrently produce effort in the young people, where they assert their agency in order to sabotage the school's reputation.

While Dave's experience is a series of divergences, for Jeff (Y10, male, Chapter 5), his ability, the expectations on him and his and teachers' desire to achieve them align. For Jeff, the choice between care for 'me' and 'the school's reputation' is a false one:

"I think Parkside's both like; the good grades help us. They feel that they need to take care of us and they feel like we're all special and that's why they want us to get good grades so that we can do better in life."

Achieving good grades is thought by Jeff to be in his interests and so when teachers care about this, they are expressing care for him. For Jeff, there is little sense of misalignment and a much more blurred sense of embodied and digital self, where a school that cares about his data is one which cares about him and his future. Rather than either care being expressed for him or for the school's reputation, his take is that both can be served together. Brian (Y11, female, Chapter 5) and her friends Helena and Anne again complicate the binary choice, saying it's not either care for 'me' or the 'reputation' of the school but:

Brian: In between.

Helena: Yeah.

Brian: Obviously they would care about reputation but I think they'd rather focus on us than their reputation.

Anne: What are they called when they come in?

Brian: Ofsted.

Anne: Ofsted, when they come in they're always like, 'Ofsted's comin' in, such and such inspectors, be on your best behaviour', like for the reputation. But as soon as they're gone they like always praise us for being that, like, they're always coming back to us.

Helena: And as well like if they care about us and then that makes us do well so then they get a better reputation overall.

Anne suggests that there is a temporary compliance with, or performance for, systems of judgment and evaluation which are focused on caring about external validation, but that following these times the focus on caring about the pupils returns. Here then there is a sense of opposition between the two but with Brian's feeling that the teachers' preference is a focus on the pupils ('*they'd rather focus on us than their reputation*'). It also suggests teachers may be compelled to go against their preferences to care for pupils rather than the school's reputation at times. This is a tension that was seen in the teacher's comments of "*it's that balancing act of actually the data's the data and Ofsted are Ofsted but there's a child in this and what's best of the child isn't sometimes best for the data*" in Chapter 5. Helena echoes Dave's view that care for the pupil leads to better performance. However, this statement raises the question about whether such care for pupils is as strategic as the focus for Ofsted. The girls' view was evident a little later, in the Gingerbread person drawing activity, where they drew a picture of Jean-Val Jean from the musical *Les Misérables* which had recently been released as a film.

Anne: If you think about that, Jean-Val Jean represents the fact that teachers care about what we do outside of school as well. They ask us, [teachers name] always goes, 'so what have you done at the weekend?' And we talk to [teacher] about that and the references that we always put to Les Mis. So they do care what we do in like our personal lives, well no not our personal lives, like outside of school. They're like don't go drinking, don't go smoking even though people do anyway, they still care. That's why Jean-Val Jean.

Matt: And so it's more like Jean-Val Jean and not like 24601? [laughter]

Anne: They care about the fact that we are a person not a prisoner.

Helena: not a number.

Anne (in musical singing-speech style): that's been put in prison for nine years for stealing a loaf of bread. (.)

Helena: We're not just our exam numbers. [laughter]

Personal care expressed through a teacher's interest in life (and sources of identity and meaning) beyond the school is enough to convince this group that there was a distinction between them and the data made about them in the school. Though some pupils do identify with their grades and do so strongly (Chapter 5, Reay and Wiliam, 1999), not all pupils experience this sense of blurring. In contrast to Brian, Anne and Helena, for Dave, and also Llewelyn and Jose (Year 11, both male, Chapter 5) the intensification of efforts to improve their levels of progress and associated grades comes to crowd out other modes of being in the school and more positive relationships with teachers. Though there are teachers that Llewelyn and Jose get on with their broad experience is conceived in more oppositional terms because the future they imagine for themselves doesn't necessitate learning the things taught in schools or in getting the grades expected of them. Llewellyn talks about taking a Science test:

"In Science, I said, before I went into the test, 'I'd be happy with a C, cos it's a pass' and I was expecting [expected to get] an A. Came out, I got a C in the end of it. And, they started shouting at us saying it wasn't good enough and I need to get an A*. It's got nowt [nothing] to do with them. If I pass then that's what they're supposed to aim for. Because I didn't get the levels of progress - everything changes since year 6, doesn't it?"*

The teacher's anger is not experienced as care for him and he rejects the responsibility that teachers, through data, are asked to take of ensuring maximised pupil achievement (*'It's got nowt to do with them'*). Appropriate care, for Llewellyn, is being satisfied with him passing - not to hold him to meeting targets and expected levels of

progress. Members of staff are not just willing and made to exercise care through 'getting the data' (Chapter 5) but are also, through the data, exposed to pupils as those who must take care of them and their future through the pupils' co-operation and achievement. When faced with pupils like Llewellyn and Jose, a 'lack' of care about evidencing set learning outcomes becomes a 'lack' of care of the teacher and the school. To return to the instance when a teacher tells colleagues about a pupil's response to a target grade in a departmental staff meeting:

"He said, 'Don't care what I get, I'm goin' to work for me dad'. That's nice [for him] but what about me?"

Care in a context of data, because of the binding and bundling effects of data, results in reversals and perturbations of the relationships between teachers and pupils (and adults and children) where pupils are asked to care for their own data personae and that of the school and of their teachers. For Jose, even when there is little of interest for him in the subject his co-operation can still be elicited. So of the science teacher:

"She's being alright with me so I'll do my bit." Jose

Similarly for Arya (Chapter 5) the relationship is understood as a transaction:

"I think where the school cares about us, we then in return care about the reputation of the school so we'll try our hardest for ourselves and for the school."

In the ambiguity of the shifting grammar of agency and contestation over futures through data, 'doing my bit' becomes one side of a reciprocal expression of care, whether it is done for the school, the teachers, 'me' or for the benefit of all. If one aspect of care is responsibility (as *per* Williams, 2001), one of the imperatives is to consider whether teachers should in fact be made responsible for pupils' learning through data (and what this means for the agency of the pupil in their learning) and whether pupils should be asked to be responsible for securing teachers' professional identity and futures. To expect, even demand, so much of the teacher-pupil relationship, and of data as a source of meaning and identity seem, to me, to ask them to bear too much: it diminishes learning to the measurable, identity to the vagaries of

changing government priorities and assessment regimes, and the relationship of teacher and pupil to a functional transaction valuable only in what one secures from the other. These are serious problems to be address and should not be mistaken for simply 'misuses' of data – as I have tried to show the unintended and less welcome effects of data are not neatly separable from those experienced by some, at some times and in some places, as more positive.

In “Love Your Monsters: Why We Must Care for Our Technologies As We Do Our Children,” an extended quotation from which appears in the footnote below⁷, Latour argues that rather than look on in horror at the unintended consequences of our

⁷ *“In the modernist narrative, mastery was supposed to require such total dominance by the master that he was emancipated entirely from any care and worry. This is the myth about mastery that was used to describe the technical, scientific, and economic dominion of Man over Nature.*

But if you think about it according to the compositionist narrative, this myth is quite odd: where have we ever seen a master freed from any dependence on his dependents? The Christian God, at least, is not a master who is freed from dependents, but who, on the contrary, gets folded into, involved with, implicated with, and incarnated into His Creation. God is so attached and dependent upon His Creation that he is continually forced (convinced? willing?) to save it. Once again, the sin is not to wish to have dominion over Nature, but to believe that this dominion means emancipation and not attachment.

If God has not abandoned His Creation and has sent His Son to redeem it, why do you, a human, a creature, believe that you can invent, innovate, and proliferate -- and then flee away in horror from what you have committed? Oh, you the hypocrite who confesses of one sin to hide a much graver, mortal one! Has God fled in horror after what humans made of His Creation? Then have at least the same forbearance that He has.

The dream of emancipation has not turned into a nightmare. It was simply too limited: it excluded nonhumans. It did not care about unexpected consequences; it was unable to follow through with its responsibilities; it entertained a wholly unrealistic notion of what science and technology had to offer; it relied on a rather impious definition of God, and a totally absurd notion of what creation, innovation, and mastery could provide.” Latour (2012, n.p.)

actions (in particular on 'Nature') we must care for the 'monsters' we have created. The sense of agency attributed to the data-composites that circulate in the school and which now frequently precede pupils' embodied encounters with their teachers appears to fit with Latour's ideas of monsters and dubious mastery. That some use the language of the monstrous (Lawn & Ozga, 2010) in relation to school data continues this Frankensteinian theme. If governing by numbers is a tyranny, what would it mean to resist a 'pupil multiple' which already exists in the world and is lively, active and acting? Instead of arguing that 'It's all about caring for people and not data', I think we need to pay attention to the way that such a neat distinction is already no longer sustainable – at least according to some pupils. Indeed to care for the pupil and not 'the data' would be to reject their call for the care for and about their data. Rather, I think that care in the context of data means acknowledging the coherences, divergences and blurrings that occur and recognising that what feels like care will depend on the way in which pupils understand the relationship between education, data and their desired futures.

These acknowledgements are about taking responsibility for the different relations pupils (and teachers) have with data. So where there are coherences the pupils are seen to be 'on track', productive, diligent and engaged. But they are engaged in more than some kind of 'neutral' learning – they are placing trust in teachers, in themselves, in society that the promise of work now will be rewarded in the school-college-university-'good job' narrative. And their ability to cohere to their data personae implies an evenness of ability across subjects, a consistency in achieving progress as linear improvement, and the absence or overcoming of challenging life events. This is much to assume of pupils and the apparent ease of teaching such pupils should not absolve teachers of the responsibility to recognise the circumstances which allow them to do this or the need to question the narratives which underlie their 'success' and beliefs about why others 'fail'. For those who diverge from their data personae or where contestation arises, sensitivity is needed to recognise the conflicts as more than interpersonal disagreements (between a 'terror' of a pupil and a 'bang out of line' teacher). Much more is at stake here and teachers need to consider the abilities they

have to exert and maintain pressure on students when their professional identities and the future of the school are at risk. Acknowledging that the reasons for the antagonism are more than personal is to go some way to avoiding the individualised demonisation of pupils that can occur which fall back on deficit models of personhood. For those for whom there is a blurring of body and bytes, where I am my data, I think this entails acknowledging the validity of this mode of constructing the self but also the dangers of such identification. For pupils and teachers, like with Brian, Helena and Anne above, connecting over more than learning, from one of the wide array of sources of meaning, is to value pupils beyond their ability to perform.

In addition to these forms of acknowledgement, recognising that 'care' is not always experienced as such is important if teachers and pupils are not to provoke resentment through inattention to the other's felt needs. That not all pupils desire the same futures, that not all pupils are persuaded of the value of education – as it is currently enacted in schools – that not all pupils feel the pull or pleasure of producing expected data is not inconsequential. Rather than effacing these differences the best teachers explore with pupils what it means to work with them. However, whether the spatial arrangement and assembly of the resources of the school support this end is another matter.

In these ways, instead of recoiling in horror at the monsters of data-based education I think we need to consider what it might mean to 'love our monsters' and their unintended effects. As data are both domain-specific (and so the conditions of the production of data matter) and frequently shorn of those domains, the conditions under which they circulate, are analysed and do work in the world also matter. For this reason I would argue that care in a context of data means caring for the data made about pupils and caring about what they do – especially when they are visualised, and how they travel. This is a part of, rather than necessarily in opposition to, caring for pupils. It means paying attention to the divergences and blurrings and caring about the effects for pupils of negotiating the multiplicity of their data personae.

Some pupils in the school, who experience the effects of production, circulation and use of data negatively, have no trouble believing that the school cares about the data more than them. For these pupils I think schools need to think about what it means - to reverse the title of Latour's piece - to care for our children like we care for our technologies. How can teachers relate with pupils who feel a sense of misalignment between their hopes and the expectations made of them, particularly when there is such a 'push' to produce the expected data? It seems improbable that a school or a government could or would support a pupil to take a path that accepts anything other than that maximising achievements, especially given the presumption that for most, if not all, pupils, maximised achievement is in the pupil's best interests. The knotty issue of paternalism hovers over this discussion and although others have provided cogent philosophical accounts in which they reason when paternalism may be justified as ethical (Kleinig, 1984; Conly, 2013), I remain sceptical about the ability to coerce learning in the face of entrenched opposition. The need to consider what it means to care for these pupils in the context of data becomes more pressing when the age to which pupils must remain in education or training is being extended.

A distinction should be made here between approaches to these pupils and others which could be characterised as careful but which are not the same as being full of care. The need to maintain and maximise a pupil's data does lead to examples like that given by Nicki (Chapter 5), where a careful approach to minimising risk means denying the pupil an opportunity to take a course that she would like to take. A couple of pupils also alleged that they knew of pupils who had been excluded on behaviour grounds which they believed to be spurious as a way for the school to protect results. It is understandable that limited resources make 'pathway' approaches necessary which package different options together, some of which will fit less well for different pupils. However, the need to ensure the highest grades arguably pits learning that pupils constitute as meaningful (even if it doesn't translate to maximised achievement) against taking courses in which learning achievements are more likely to be secured. This is particularly confusing for pupils told to aspire and then denied the means to pursue opportunities for learning which might not result in sufficient success.

Although it is arguably lacking in care to allow a pupil to take a course that they are likely to fail when other options are available, the lack of agency that some pupils feel in being presented with the language of pathways and options but finding them closed is dispiriting. Conversations do take place over GCSE options and the space, in interviews, to reflect on and talk about data (in a non-judgmental manner) seemed to be appreciated by the pupils.

Making space to talk in schools, indeed the opportunity for reflective conversations, seems highly valued (some people talked in interviews of how helpful they found talking with a school counsellor for example). Further, the space provided through the Participatory Action Research projects, though not focusing on data directly, did allow for pupil-initiated conversations with teachers and fellow pupils to take place. The Year 7 group wanted to investigate how teachers relate with different year groups and the year 9 pupils wanted to look at how pupil effort changes throughout the day and how teachers responded to this. Both groups highlighted the importance they placed on relationships with teachers in which there was a mutual sense of support, respect and trust. The pupils took the work I presented them early in the process about data in the school and reframed it as questions of 'who gets more attention' and 'how effort is thought about', which placed the relationship between pupil and teacher as central. This is part of the reason I have dwelt on the subject of care in a context of data and to what extent the proliferation of data acts to increase that mutual sense of support, respect and trust or diminishes it. My response has been that it works in both of these ways for different pupils but not directly along lines of difference but around the beliefs about whether enrolment in schooling will enable the desired futures imagined.

The calls by some pupils for more data, and the apparent appreciation of the opportunity to review their data and space to 'make sense' of that data, suggest one avenue for caring for the 'pupil multiple'. In this I find myself in accordance with Facer's proposal that:

"Starting from the assumption of young people as authors of rich accounts of themselves, would bring a new onus on educators to work with young people to discuss

patterns in their data trails, explore alternative narratives, construct different descriptions of themselves, explore how individual narratives relate to those of other people or other periods.” (Facer, 2012: 721)

The pupils lying on the floor in the P.E. class (Chapter 6), getting up and together tracing out with their fingers lines of a spreadsheet on an electronic board have already started this process of (re-)socialising their data. I believe educators should encourage the conditions which allow for this kind of supportive sociality, as well as data, to proliferate. In view of this I will go on to make some proposals which could be taken up by schools and accepted by policy makers in response to this thesis.

I have argued in this section that care in the context of data entails attention and responsibility for the data made about pupils and what they do – especially when they are visualised and how they travel. I will suggest that this is a part of, rather than necessarily in opposition to, caring for pupils. It means being aware of the divergences and blurrings, misalignments and slippages and supporting pupils through conversations about how they negotiate the meaning and multiplicity of their data personae. Whilst a need for reciprocal care through data – of teachers for pupils and for pupils of teachers – may imply a shift in the power of young people, and without wishing to diminish young people’s agency I think we ask too much of young people in making them – through data – responsible for securing a teacher’s professional identity and futures. I believe that making teachers responsible for ‘getting the data’ for and from pupils protects pupils from education abandonment, but risks diminishing the experience and effects of learning as something for and from young people themselves.

Proposals

These proposals arise from my own reflection on what I have observed and heard from pupils and teachers. They take up the concerns of pupils and reflections of teachers on the issues of care in the context of data explored above. They are aimed at improving current practice – taking responsibility for the unintended effects of a proliferation of data – rather than abolishing the structures that lead to ‘the monsters of data’. The

main challenges as I see them are that the proliferation of data has led to a range of more or less informal practices which would benefit from systematic reflection and the development of processes which encourage a project of collaborative ethical reflection. Some of the issues raised in this thesis include a lack opportunities for pupils to request data and the means to talk about the decisions made on the basis of them, concern about the ways in which data are presented in the school and the shaming effects of this and a need for teachers to discuss the social, emotional and psychological repercussions of being a data-based school and the concerns about the basis and effects of using pupil data in performance management processes. For this reason I propose:

- Schools should produce and review yearly a ‘data policy’⁸ which describes:
 - What data will be produced, how they will be stored and, in time, erased. It should also detail how they will be used and who will have access to them, particularly where data are passed, sold, or exchanged with agencies outside of the school. Schools should not enter into agreements with external agencies, excepting where the permanent storage of data fulfils a statutory duty, which does not allow for the subject of the data to request the deletion of that data.
 - The approach that will be taken to inform pupils and parents if there are breaches of privacy with respect to data through loss, technology failure or theft.
 - An informal mechanism for pupils to request to view their data and to discuss it with a trusted member of the teaching staff, most commonly a class tutor or year leader.
 - A mediation process which allows a pupil, alone or with a parent, to dispute decisions made on the basis of data which they see as problematic.

⁸ One of the first examples of this at a university level is the Open Universities policy which may be viewed here: <http://www.open.ac.uk/students/charter/essential-documents/ethical-use-student-data-learning-analytics-policy> (Accessed August 2015). It is based around eight principles. Principle 3 is: “Students should not be wholly defined by their visible data or our interpretation of that data.”

- A process for a regular review of how data are displayed in the school which seeks the input of pupils.⁹ Given pupils' concerns about static displays, compelling reasons should be given to justify displaying individual/identifiable pupil data in what constitutes pupils' public, working and leisure space. Where data are displayed it should be kept up-to-date.
- Teaching about digital literacy and data privacy should include and not omit discussion of pupil data in schools including data produced through web-based learning platforms.
- Teachers should receive regular training to ensure confidence in the principles and practice of data production and analysis. This should not merely be technical but allow the opportunity to reflect on the emotional, social and psychological effects of data use (for both teachers and pupils) and for discussion of what constitutes ethical practice in relation to data.¹⁰
- The concern for accurate data as a basis for assessing pupil learning and planning activities to deepen that learning, is in tension with the imperative to produce data which secure part of a teacher's pay award and a school's reputation. If data are to command pupils', parents' and wider public confidence it should not be used as the basis for performance-related pay.

Contributions

In the remaining sections of this chapter I will outline the contributions the thesis makes and offer reflection of possible future directions for research in these areas. This thesis represents a critical case study which informs discussion about the restructuring of education in contemporary society, the making of schools as places,

⁹ Static displays, particularly those in corridors, were a particular concern both to those who had high levels of progress and those who did not. Pupils expressed concerns for peers who had experienced embarrassment or shame in relation to these.

¹⁰ Such training could highlight that as pupils relate to the data made about them in different ways they also experience teachers' concern about data differently. Attention should be paid to school culture, including the quality assurance processes, which recognise the risk of a culture of fear where the pressure to deliver results in emotional reprisals, as a form of bullying and revenge-taking, that come from a teacher feeling let down by a pupil or a pupil with a teacher.

and the formation of (self)-knowledge workers for a knowledge economy. Drawing on the experiences of pupils in a data-based school (which had been strikingly absent from educational writings on data) I have offered reflection towards an ethic of care in relation to data with implications both for practice and policy in schools but also of relevance to broader discussions about how to make sense of the life of data and data-based living. In these ways the research was positioned to make contributions to education studies, the sociology of education, data studies and the geographies of education, childhood, youth and young people, futurity and data.

For geographies of education I complement and extend existing work about materiality (Kraftl, 2006a, 2006b), emotions (Kenway and Youdell, 2011; Pykett, 2012; Gagen, 2015) and futurity (Haplin, 2003a, 2003b; Katz, 2011; Kraftl, 2008) by thinking about the ways in which data become implicated in the process of education and the production of futures. In this way I add to the 'awkward geographies of schooling' and seek to address both their paradoxical centrality and marginality (Thiem, 2009; Holloway et al, 2010). Rather than using the school only as means to think through other changes, the focus of the research comes back to the school itself as 'data factory' or perhaps 'data centre', where maintaining the production, management, analysis, interpretation and flows of data becomes essential to a school's current mode of functioning. In the data-based school, the curricula, the modes of assessment and teachers' and pupils' roles are all reshaped to enable evidence-based learning and account-giving.

By making a distinction between education and schooling and teaching and learning I was able to explore the ways in which the school as a socio-spatial achievement of assembled and arranged resources becomes focused on producing not only a schooled subject who can be taught but an educable subject who will learn. In this shift the teacher becomes less a transmitter of information and more a data producer and analyst who enrolls the child as the same – as a social scientist of their own learning ability, achievements and life trajectory. This significantly extends the existing work in education studies (Kelly & Downey, 2011; Ozga, 2009) and the emerging literature on data studies in education (Ball, 2015; Sellar, 2015; Selwyn, 2015; Williamson, 2014a,

2014b, 2014c, 2014d, 2015a, 2015b) by presenting how the proliferation of data is negotiated in practice rather than conceived in policy or surveyed programmatically. The contribution to geographically located and spatially sensitive analyses, shows that changes in pedagogies and the conditions for/of learning itself, shape and are shaped by spatial processes. That these changes are profound means that there is significant scope for geographies of education, whether exploring formal or informal education, and whether in schools, workplaces or other sites, to trace the roles that data are playing in the (re)making of these spaces and people's experience of them. Given geographers' contributions to spatial-sensitive accounts of data assemblages they would, I believe, be well placed to further conversations about the implications of such change and add to conversations about policies which support ethical reflection and action in relation to data.

For geographies of childhood, youth and young people the thesis contributes to understandings (Uprichard, 2008; Evans, 2008) of a significant set of socio-material resources with and against which young people are constructing a sense of self, their (dis)abilities and desirable, possible and likely futures. Although young people encounter, produce and re-work data in many settings in their lives, the assemblages in which school data are produced result in data which are accorded significant power (Reay and Wiliam, 1999), leading for some to a rethinking of deficit narratives and for others to such narratives being further confirmed with a fresh intensity. A young person's options and opportunities in the school, which classes they are in and with whom they share them, which teachers they have and how those teachers are disposed to them are informed by the data produced and expected which circulate within and outside of the school and are displayed in their books and in the corridors.

Whether young people diverge from, cohere or blur with their data personae, strong emotions are elicited in relation to this data, whether sadness, anger, confusion, surprise or joy. The same is true of teachers and the binding together of pupils and teachers through the co-colonisation of futures subverts traditional understandings of the relationship between adults as powerful and children as dependent (extending some of the themes of the new sociology of childhood, James et al., 1998; James and

Prout, 1997). Pupils depend on teachers' efforts to get them the data and teachers depend on the efforts of children to secure their professional identity and futures and well as the future of the school and nation. The work therefore contributes to accounts of ambiguous agency (Bordonaro and Payne, 2012) which value but move beyond the tenets of the new sociology of childhood. The research also contributes to research (Brown, 2011, 2013; Holloway and Pimlott-Wilson, 2011, 2012; St Clair et al., 2011) which has explored the ways in which young people aspire and imagine their futures by exploring the ways in which these ideas shape and are shaped by the production of school data. It outlines the ways in which futures which are not seen to be accordant with the imperatives of state progress come to be made a problem in the lives of young people through the contestations around data.

For the emerging geographies of data, and data studies more broadly, I have contributed to methodological reflections on and theorisations of data which necessitate an attention to the interplay between (rather than the opposition of) the life of data and data-based living (Kitchin and Dodge, 2011, Kitchin, 2014a, 2014b, 2014c). To have played off data-centric accounts and people-centric accounts of data against one other would have been to miss the dynamic nature of agency as it is being outworked in this context. Indeed, the point is that the two 'modes' of life are not neatly separable. This has allowed me to contribute to understandings (Amoore, 2014) of the relationships between different data traces, and bodies and bytes, by understanding the relations as resulting in coherence, divergences and blurrings. I have also critiqued the idea (Selwyn, 2014; Williamson, 2014c) of the 'data double', suggesting the need to think about 'data multiples' to account for the many kinds of data that are assembled, sorted and sifted in producing a data-based pupil about whom decisions can be made.

In arguing, from the school, that data result in bundling and binding in particular ways, for particular actors, and in maintaining a focus on the effect of relationships between actors I have sought to navigate a route between accounts at the scale of the smart city and the quantified self (Kitchin, 2014b, Wilson, 2015). There can be a tendency in both kinds of account to omit any sense of what this might mean for particular bodies

(whether along traditional axes of difference or emerging ones). When the smart city literature takes 'the city' rather than city dwellers as its objects my sense is that to date it has tended to focus on the programmatic aims and intended effects of data assemblages rather than the messy and unintended results in practice. Projects like the Programmable Cities project headed by Rob Kitchin are likely to address this. Similarly, emerging quantified-self literature risks presenting undifferentiated bodies (which in fact because of the embedded assumptions do imagine particular (adult) bodies, whilst appearing generic). By offering particularised accounts, I have sought to foreground the ways in which young people and teachers are making sense of data. Not that they make sense of them in the same way but they contradict ideas that data are unimportant to them, merely tyrannical or only transformative and individualising in a way which is antithetical to any kind of sociality.

For literature concerning futurity I contribute to understandings (Halpin, 2003a, 2003b) of the ways in which education and futurity are co-constituted and that an increasing way in which futures are being imagined, governed and realised is through and against data. Future-making takes place through relations and practices which shape and are shaped by the affordances of the resources available to pupils and teachers, not exclusively, but significantly through data. Data become both a means of envisaging futures, and communicating them as expected, probable and possible and also of seeking to realise them. These relations and practices are not confined to the statistician, the bureaucrat and the politician but are something expected of pupils and teachers. For both there is a need to learn about data and their interpretation and through everyday classroom activities of prediction, planning and practice a pedagogy of futurity is enacted. This contributes to understandings of the ways in which non-expert actors take up data in engaging with futures. A further contribution was two particular kinds of relation to futurity. I advanced the prevalence of the idea of 'the expected' over against prediction. I also argued for a novel theorisation of progress 'after the affective turn', in which that relation is not sufficiently understood as developmental fact, logic, ideology or discourse but as something felt. This contributes

to literature on futurity (Anderson, 2009, 2014) in exploring how engaging with futurity feels and that emotions sustain and challenge future-making practices.

Finally, I have sought to contribute not only empirically but ethically in considering what might constitute an ethic of care with respect to data and also in the approach I took with the research. This was a refusal of many of the omissions I perceived: to research education but not talk to pupils, to consider policy but not practice, to write surveying a domain but not from detailed engagement with particular places, to research data but not how particular people act with, experience, rework and theorise those data. My hope is that while of interest in its own right the practice of research I engaged with here offers an additional and compelling way of approaching the kind of issues of interest I have discussed here. With this in mind, I will now turn to avenues that the research opens up for further investigation.

Futures

As I have argued, there were important reasons for conducting the research in the way I did to understand the interplay between the life of data and data-based living and to hear from pupils about their experience in particular. I also made arguments for why I thought it important to do this in one school. Future research about the geographies of educational data could take extend these findings in several ways. I also gesture towards avenues for other work on the life of data and data-based living.

First, the research could be extended by attending to the data infrastructures and actors which exist in relation to but are physically external from the school. A multi-sited ethnography might be a particularly suitable approach to this. Although some work has brought together insights from different national education systems (Schildkamp et al., 2013), to understand some of the similarities and differences through comparative studies would be instructive. Further given that this school was exceptional in relation to the progress made by its pupils it would be important to consider the multiple ways in which schools are likely to be relating to and innovating with data. Work by Selwyn, et al. (2015) suggests that some have much stronger divisions between the producers and users of data with the 'doers' and the 'done to'

than was evident in the school in which this research was conducted. To elucidate these differences will be important in provincialising the claims about 'what data are doing in schools' which are made without due attention to the variegated coming-togethers of different data assemblages. This is highly important in broader work also and there is a risk that work on smart urbanism for example will universalise the experiences of one place (and certain actors) when comparative approaches are likely to draw out these differences more effectively.

Second, the research could be extended by a more thorough attention to the ways in which schools are experimenting with the visualisation of data. Attention to the circulation not only of data but visualisations of those data would be particularly instructive, such as in the use of data dashboards for example. Relatedly, what kind of interfaces are made and translations take place in relation to data, particularly when based on learning analytics? The conditions in which pupils, parents, teachers, school governors, politicians and civil servants come to encounter and make sense of educational data could therefore be explored. Placing this in the context of work on digital cultural objects and the making and circulation of data visualisations (Rose, 2015) suggests the need and opportunity for further conceptual and methodological work here.

Third, a more software-studies informed approach could explore the code, algorithms and software which subtend the production and use of data in schools. The moves to introduce coding as part of the school curriculum suggest interesting avenues for understanding schools as coding spaces (Williamson, 2015a) as well as code/space (Kitchin and Dodge, 2011). By contrast, a focus on childhood and youth studies could open up the ways in which young people shape and are shaped by data-based living outside of schools and the nature of any interaction between the school and other spaces in a child's life. This could consider the continuities and discontinuities of different digital cultures of spaces of childhood and how they are informed by code, algorithms and software. For work on smart urbanism an attention to children would be one way by which to turn the analytic lens to particular people's experiences of 'smart' data-based living as already existing rather than a project of envisioned futures.

Fourth, the research could be extended by exploring similar issues in education beyond schooling such as formal education institutions like universities or other spaces of learning like the workplace. Just as the spaces of education go far beyond the (state secondary) school so do the geographies of educational data. Similarly, while the geographies of education have tended to explore particular spaces of education there is more that could be done to think about how the pupils of data-based schools go on to learn in other settings, whether in work, further education or informally. What implications do identities forged with and against data have for one's capacities to learn in settings shaped by different expectations, different demands and different systems of assessment and measurement? To open up 'between' the scales of the smart city and quantified self a renewed focus on institutions (after Philo and Parr, 2000) is one way to seek to avoid the tendency to atomise or totalise.

Fifth, and finally, I note the change that was underway at the time of the research continues at pace. With the announcement that national curriculum levels would be scrapped (DfE, 2013), but measures of progress not, each school has had to face the question, 'What does it mean to measure progress without (national curriculum) levels?' The place of progress will be embedded further in the system of accountability from 2016/2017 through a new league table measure, 'Progress 8' (alongside 'Achievement 8') (DfE, 2014). 'Progress 8' is a rather complex score calculated for each pupil: *"comparing their achievement - their Attainment 8 score - with the average Attainment 8 score of all pupils nationally who had a similar starting point (or 'prior attainment'), calculated using assessment results from the end of primary school. The greater the Progress 8 score, the greater the progress made by the pupil compared to the average of pupils with similar prior attainment"* (DfE, 2014:5-6). Expected levels of progress is a rather simple metric by comparison but 'Progress 8' is being brought in to introduce a comparative element across schools and to addresses concerns that schools were focusing on a restricted curriculum in order to maximise learning gains in league-table visible activities especially in English and Maths. Further, the opportunity to act strategically to 'game the system' appears, at least at this stage, to be considerably more difficult. The minimum grades a pupil would need to get a positive

Progress 8 score cannot be calculated in advance because it is based on a comparison with those in their cohort who similarly do not know their grades. (One can remember at this point that data may be individualised but in the context of education data is not individual, it is always social, produced in relation to the 'data assemblage' (Kitchin, 2014) and in this context the array of other data personae.) What 'rules of thumb' schools will develop in deciding how to allocate their limited resources remains to be seen when the future being unknown rather than expected is built into the metric. That schools will be credited for every 'grade increase', whether or not a pupil reaches their expected grade, appears to be an improvement, but the focus on maximisation continues. What remains, I submit, is the need for a robust discussion on ethics of data production and use in schools and, whatever the particular implementations of the new metrics, it seems clear that we will see a shifting and perhaps new set of relations emerge between education, data and futurity.

Appendix – List of interviews

Pupils

‘Dave’ – male, Year 11 | 30/01/13

‘Jeff’ – male, Year 10 | 30/01/13

‘Brian with Helena and Anne’ – female, Year 11 | 30/01/13

‘Nicki and Elena’ – females, Year 10 | 30/01/13

‘Amy’ – female, Year 11 | 30/01/13

‘Wreath’ – male, Year 11 | 01/03/13

‘Mark’ – male, Year 10 | 01/03/13

‘Laura’ – female, Year 10 | 01/03/13

‘Rose’ – female, Year 10 | 01/03/13

‘Adam’ – male, Year 11 | 11/03/13

‘Arya’ – female, Year 11 | 11/03/13

‘Zac’ – male, Year 11 | 15/03/13

‘Llewellyn & Jose’ – males, Year 11 | 15/03/13

‘Millie and Texas’ – females, Year 10 | 17/05/13

Teachers

Male, Assistant Headteacher (and Vocational Co-Ordinator) | 08/05/13

Male, Deputy Head; (Maths) | 13/05/13

Male, Assistant Head; Subject Leader for Mathematics | 03/07/13

Female, Year 7 Leader, (i/c Business Studies) | 04/07/13

Female, Vocational Manager (Director of Partnerships) | 04/07/13

Female, Gifted & Talented Co-ordinator and Assistant Head of Science | 08/07/13

Female, Headteacher | 10/07/13

Male, (Subject Leader for History and) EBacc Coordinator | 10/07/13

Female, Assistant Head; (Science) | 10/07/13

Female, Assistant Headteacher, ([acting] Subject Leader for English) | 11/07/13

Female, Humanities Teacher | 16/07/13

Female, English Teacher | 17/07/13

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